Service Manual

Model : KG800

Service Manual

KG800

Date: July, 2006 / Issue 1.0

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1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it.
The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc.Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the sign. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop

1. INTRODUCTION

PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Pseudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

2. PERFORMANCE

2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-Poly, 800mAh Battery Size : 40 (W) × 60(H) × 4.6(T) [mm] Battery Weight : TBD	
Stand by Current	Under the minimum current consumption environment (such as paging period 9), the level of standby current is below 4mA.	
Talk time	Up to 3 hours (GSM TX Level 7)	
Stand by time	Up to 200 hours (Paging Period: 9, RSSI: -85 dBm)	
Charging time	Approx. Under 3.75 hours	
RX Sensitivity	GSM, EGSM: -104dBm, DCS: -104dBm	
TX output power	GSM, EGSM : 33dBm(Level 5), DCS, PCS : 30dBm(Level 0)	
GPRS compatibility	Class 10	
SIM card type	3V Small Only	
Display	Main LCD : TFT 176 × 220 pixel 265K Color	
Status Indicator	Hard icons. Key Pad : 0 ~ 9, #, *, Touch key : Send, Clear, Confirm, menu, contacts, Left, Right, Up, Down key. Side Key : Volume up, down, End Key, MP3 Key	
ANT	Internal	
EAR Phone Jack	Yes (stereo)	
PC Synchronization	Yes	
Speech coding	EFR/FR/HR	
Data and Fax	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recoding	Yes	
Microphone	Yes	
Speaker/Receiver	Speaker/Receiver	
Travel Adapter	Yes	
MIDI	64 Poly (Stereo SPK)	
MP3/AAC	Yes	
Options	Multi Link Data Cable	

2.2 Technical Specification

<table>
<tr><th>Item</th><th>Description</th><th colspan="6">Specification</th></tr>
<tr><td>1</td><td>Frequency Band</td><td colspan="6">EGSM
• TX: 890 + (n-1024) x 0.2 MHz
• RX: 935 + (n-1024) x 0.2 MHz (n=975~1024)
DCS
• TX: 1710 + (n-512) x 0.2 MHz
• RX: 1805 + (n-512) x 0.2 MHz (n=512~885)
PCS
• TX: 1810 + (n-512) x 0.2 MHz
• RX: 1905 + (n-512) x 0.2 MHz (n=512~885)</td></tr>
<tr><td>2</td><td>Phase Error</td><td colspan="6">RMS < 5 degrees
Peak < 20 degrees</td></tr>
<tr><td>3</td><td>Frequency Error</td><td colspan="6">< 0.1 ppm</td></tr>
<tr><td rowspan="20">4</td><td rowspan="20">Power Level</td><td colspan="6">GSM, EGSM</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>5</td><td>33 dBm</td><td>±2dB</td><td>13</td><td>17 dBm</td><td>±3dB</td></tr>
<tr><td>6</td><td>31 dBm</td><td>±3dB</td><td>14</td><td>15 dBm</td><td>±3dB</td></tr>
<tr><td>7</td><td>29 dBm</td><td>±3dB</td><td>15</td><td>13 dBm</td><td>±3dB</td></tr>
<tr><td>8</td><td>27 dBm</td><td>±3dB</td><td>16</td><td>11 dBm</td><td>±5dB</td></tr>
<tr><td>9</td><td>25 dBm</td><td>±3dB</td><td>17</td><td>9 dBm</td><td>±5dB</td></tr>
<tr><td>10</td><td>23 dBm</td><td>±3dB</td><td>18</td><td>7 dBm</td><td>±5dB</td></tr>
<tr><td>11</td><td>21 dBm</td><td>±3dB</td><td>19</td><td>5 dBm</td><td>±5dB</td></tr>
<tr><td>12</td><td>19 dBm</td><td>±3dB</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">DCS, PCS</td></tr>
<tr><td>Level</td><td>Power</td><td>Toler.</td><td>Level</td><td>Power</td><td>Toler.</td></tr>
<tr><td>0</td><td>30 dBm</td><td>±2dB</td><td>8</td><td>14 dBm</td><td>±3dB</td></tr>
<tr><td>1</td><td>28 dBm</td><td>±3dB</td><td>9</td><td>12 dBm</td><td>±4dB</td></tr>
<tr><td>2</td><td>26 dBm</td><td>±3dB</td><td>10</td><td>10 dBm</td><td>±4dB</td></tr>
<tr><td>3</td><td>24 dBm</td><td>±3dB</td><td>11</td><td>8 dBm</td><td>±4dB</td></tr>
<tr><td>4</td><td>22 dBm</td><td>±3dB</td><td>12</td><td>6 dBm</td><td>±4dB</td></tr>
<tr><td>5</td><td>20 dBm</td><td>±3dB</td><td>13</td><td>4 dBm</td><td>±4dB</td></tr>
<tr><td>6</td><td>18 dBm</td><td>±3dB</td><td>14</td><td>2 dBm</td><td>±5dB</td></tr>
<tr><td>7</td><td>16 dBm</td><td>±3dB</td><td>15</td><td>0 dBm</td><td>±5dB</td></tr>
</table>

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	**GSM, EGSM**	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-63
		3,000~ <6,000	-65
		6,000	-71
		DCS, PCS	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-65
		3,000~ <6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	**GSM, EGSM**	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24

2. PERFORMANCE

<table>
<tr><th>Item</th><th>Description</th><th colspan="3">Specification</th></tr>
<tr><td rowspan="6">6</td><td rowspan="6">Output RF Spectrum
(due to switching transient)</td><td colspan="2">DCS, PCS</td><td></td></tr>
<tr><td colspan="2">Offset from Carrier (kHz).</td><td>Max. (dBm)</td></tr>
<tr><td colspan="2">400</td><td>-22</td></tr>
<tr><td colspan="2">600</td><td>-24</td></tr>
<tr><td colspan="2">1,200</td><td>-24</td></tr>
<tr><td colspan="2">1,800</td><td>-27</td></tr>
<tr><td>7</td><td>Spurious Emissions</td><td colspan="3">Conduction, Emission Status</td></tr>
<tr><td>8</td><td>Bit Error Ratio</td><td colspan="3">GSM, EGSM
BER (Class II) < 2.439% @-102 dBm
DCS, PCS
BER (Class II) < 2.439% @-100 dBm</td></tr>
<tr><td>9</td><td>RX Level Report Accuracy</td><td colspan="3">±3 dB</td></tr>
<tr><td>10</td><td>SLR</td><td colspan="3">8 ±3 dB</td></tr>
<tr><td rowspan="10">11</td><td rowspan="10">Sending Response</td><td>Frequency (Hz)</td><td>Max.(dB)</td><td>Min.(dB)</td></tr>
<tr><td>100</td><td>-12</td><td>-</td></tr>
<tr><td>200</td><td>0</td><td>-</td></tr>
<tr><td>300</td><td>0</td><td>-12</td></tr>
<tr><td>1,000</td><td>0</td><td>-6</td></tr>
<tr><td>2,000</td><td>4</td><td>-6</td></tr>
<tr><td>3,000</td><td>4</td><td>-6</td></tr>
<tr><td>3,400</td><td>4</td><td>-9</td></tr>
<tr><td>4,000</td><td>0</td><td>-</td></tr>
<tr><td>12</td><td>RLR</td><td colspan="3">2 ±3 dB</td></tr>
<tr><td rowspan="11">13</td><td rowspan="11">Receiving Response</td><td>Frequency (Hz)</td><td>Max.(dB)</td><td>Min.(dB)</td></tr>
<tr><td>100</td><td>-12</td><td>-</td></tr>
<tr><td>200</td><td>0</td><td>-</td></tr>
<tr><td>300</td><td>2</td><td>-7</td></tr>
<tr><td>500</td><td>*</td><td>-5</td></tr>
<tr><td>1,000</td><td>0</td><td>-5</td></tr>
<tr><td>3,000</td><td>2</td><td>-5</td></tr>
<tr><td>3,400</td><td>2</td><td>-10</td></tr>
<tr><td>4,000</td><td>2</td><td></td></tr>
<tr><td colspan="3">* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.</td></tr>
</table>

Item	Description	Specification	
14	STMR	13 ±5 dB	
15	Stability Margin	> 6 dB	
16	Distortion	dB to ARL (dB)	Level Ratio (dB)
		-35	17.5
		-30	22.5
		-20	30.7
		-10	33.3
		0	33.7
		7	31.7
		10	25.5
17	Side Tone Distortion	Three stage distortion < 10%	
18	System frequency (13 MHz) tolerance	≤ 2.5ppm	
19	32.768KHz tolerance	≤ 30ppm	
20	Ringer Volume	At least 65 dBspl under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
21	Charge Current	Fast Charge : < 430 mA Slow Charge : < 160 mA	
22	Antenna Display	Antenna Bar Number	Power
		5	-85 dBm ~
		4	-90 dBm ~ -86 dBm
		3	-95 dBm ~ -91 dBm
		2	-100 dBm ~ -96 dBm
		1	-105 dBm ~ -101 dBm
		0	~ -105 dBm
23	Battery Indicator	Battery Bar Number	Voltage
		0	3.36 ~ 3.54 V
		1	3.55 ~ 3.66 V
		2	3.67 ~ 3.72 V
		3	3.73 ~ 3.84 V
		4	3.85 V ~
24	Low Voltage Warning	3.55 ±0.03V (Call)	
		3.48 ±0.03V (Standby)	

2. PERFORMANCE

Item	Description	Specification
25	Forced shut down Voltage	3.35±0.03 V
26	Battery Type	1 Li-Poly Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 800mAh
27	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60 Hz Output: 4.8 V, 900 mA

3. TECHNICAL BRIEF

3.1 Power Transceiver (SKY74400, U401)

The RF parts consist of a transmitter part, a receiver part, a frequency synthesizer part, a voltage supply part, and a VCTCXO part. The SKY74400 power transceiver is a highly integrated device for quad-band Global System for Mobile Communications (GSM), General Packet Radio Service (GPRS), and Enhanced Data for GSM Evolution (EDGE) handsets. The device supports GSM850, EGSM900, DCS1800, and PCS1900 applications.

The power transceiver consists of a direct conversion receiver and power amplifier (PA) with an integrated PA Control (iPAC) function, fully integrated into a single module. All RF inputs and outputs of the device are fully matched to 50Ω .

The receiver path implements a direct down-conversion architecture that eliminates the need for Intermediate Frequency(IF) components. Four integrated Low Noise Amplifiers (LNAs) are internally matched to 50 Ω, which eliminates the need for external matching components. The receiver path also contains a quadrature demodulator, selectable receiver baseband filter bandwidths, low droop DC-offset correction sequencer, and integrated 2nd order Intercept Point (IP2) calibration circuitry.

The SKY74400 also features an integrated, fully programmable, sigma-delta fractional-N synthesizer suitable for EGPRS multi-slot operation. The reference frequency for the synthesizer is supplied by an integrated Voltage Controlled Crystal Oscillator (VCXO) circuit that enables the use of a low-cost crystal.

The VCXO also provides a buffered output to supply other devices in the system.

The transmit path uses a translation loop architecture. This architecture consists of an In-phase and Quadrature (I/Q) modulator and a frequency translation loop to perform frequency up-conversion with high spectral purity. The translation loop also contains a phase-frequency detector, charge pump, mixer, programmable dividers, and high power transmit Voltage Controlled Oscillators (VCOs) with no external tank required. The transmit loop is directly connected to the PA section of the power transceiver, which consists of separate GSM850/EGSM900 and DCS1800/PCS1900 blocks fabricated on a single GaAs Heterojunction Bipolar Transistor (HBT) die, impedance matching circuitry for 50 Ω output, and a custom BiCMOS PA control block with an internal current-sense resistor.

- Receive section. Includes four integrated LNAs with 50 Ω inputs, quadrature demodulator circuitry that performs direct down-conversion, baseband amplifier circuitry with I/Q outputs, baseband filter with programmable bandwidths, five stages of DC offset correction, and IP2 calibration circuitry.
- Synthesizer section. Includes an integrated VCO locked by a fractional-N synthesizer loop, a crystal oscillator to supply the reference frequency, a reference frequency output buffer, and an integrated loop filter.
- Transmit section. The transmit section is designed with a translation loop architecture that consists of an I/Q modulator, integrated high power VCOs, offset mixer, programmable divider, Phase/Frequency Detector (PFD), charge pump, and loop filter. The transmit section also includes a PA for GSM850/EGSM900 and DCS1800/PCS1900 operation with common power supply pins, 50 Ω output impedance matching circuitry, and a Power Amplifier Controller (PAC) block with an internal current-sense resistor.

3. TECHNICAL BRIEF

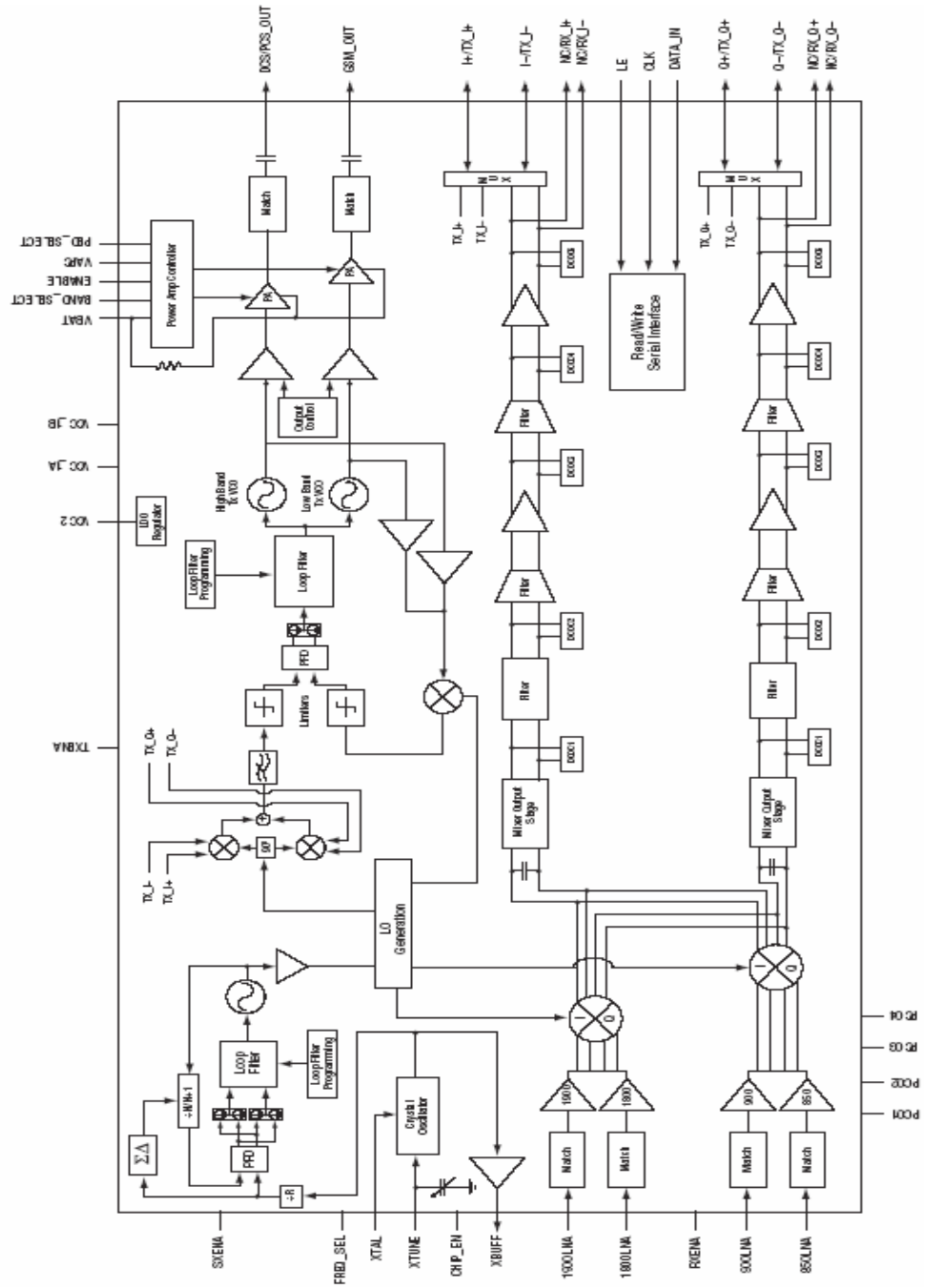


Figure. 3-1 SKY74400 FUNCTIONAL BLOCK DIAGRAM

(1) Receiver Part

A. LNA and Quadrature Demodulator

Four separate LNAs are integrated in the SKY74400 to address different bands of operation. These LNAs have separate singleended 50 Ω inputs. The LNA gain is switchable between high and low settings using the three-wire bus. The LNA outputs feed into a quadrature demodulator that downconverts the RF signals directly to baseband. The baseband I and Q paths consist of cascaded amplifiers and low pass filter sections. The baseband section provides eight programmable bandwidth settings ranging between 90 kHz and 160 kHz to allow for added flexibility when interfacing to any mixed signal baseband device.
No external capacitors are required for baseband filtering. The filter chain consists of two fixed real poles, two fixed conjugate pole pairs, and one programmable conjugate pole pair. The result is a flat passband with minimal group delay distortion at any bandwidth setting.

B. DC Offset Correction

Five DC offset correction loops ensure that DC offsets generated in the SKY74400 do not overload the baseband chain at any point. After correction, the corrected voltages are held digitally for the duration of the receive slot(s). The positive edge of the RXENA signal starts the digital DC offset correction. Since the correction is digital, a system clock is required.
To generate the clock, the reference frequency is divided down internally. A special, fast DC offset correction is carried out every time the receiver gain is programmed while RXENA is high. This ensures that a DC offset correction is complete in the time available, even if the gain is changed between slots in multislot mode.

C. AM Suppression and IP2 Calibration

For direct conversion GSM applications, it is imperative to have extremely low second-order distortion. Mathematically, secondorder distortion of a constant tone generates a DC term proportional to the square of the amplitude. In general, a strong interfering Amplitude Modulated (AM) signal is, therefore, demodulated by second-order distortion, which generates an Acinterfering baseband signal. The SKY74400 can effectively handle such AM-modulated interferers. A commonly used measure for receiver second-order distortion is the second-order intercept point, IP2. For example, to ensure that the unwanted baseband signals are 9 dB below the wanted signal required under the AM suppression test for type approval (see 3GPP TS 51.010-1), an input IP2 of 43 dBm is required. The SKY74400 RF transceiver includes a circuit that minimizes second-order distortion. This IP2 calibration circuit effectively compensates for any second-order distortion in the receive chain that would otherwise generate unwanted baseband signals in the presence of strong interfering signals. When calibrated correctly, the SKY74400 IP2 meets the GSM AM suppression test requirements in all bands with good margin.
A one-time factory calibration procedure produces a set of I/Q compensation coefficients that are programmed in the device to minimize the DC voltage shift resulting from the second-order distortion. The IP2 performance is optimized when the DC due to the interfering signal is minimized.
The determined coefficients are transmitted to the serial interface, stored in nonvolatile memory, and programmed to the SKY74400 upon each power-up as part of device initialization. The optimization process is performed internal to the SKY74400.

D. Flexible Receiver Bandwidth Control

The receive baseband filters have programmable bandwidths with eight possible settings.

(2) Synthesizer Section

The SKY74400 includes a fully integrated UHF VCO and 3rd order loop filter. A single sigma-delta fractional-N synthesizer phaselocks the Local Oscillator (LO) used in both transmit and receive paths to a precision frequency reference input. Fractional-N operation offers low phase noise and fast settling times, allowing for multiple slot applications such as GPRS.

The SKY74400 frequency stepping function with a 3 Hz resolution allows quad band operation in both transmit and receive bands using a fully integrated UHF VCO. The fine synthesizer resolution allows direct compensation or adjustment for reference frequencyerrors.

The generated frequency is given by the following equation:

$$f_{VCO} = \frac{\left(N + 3.5 + \frac{FN}{2^{22}}\right) f_{ref}}{R}$$

where: fvco = Generated VCO frequency
N = N-divider ratio, integer part
FN = Fractional setting
R = R-divider ratio
fref = Reference frequency

A. UHF VCO Frequency Setting

To tune the receiver's receive frequency (fRX), the VCO frequency (fVCO) is set according to the following equations:

GSM850/EGSM900: $f_{VCO} = \frac{3}{2} f_{RX}$

DCS1800/PCS1900: $f_{VCO} = \frac{3}{4} f_{RX}$

B. Digital Frequency Centering

The SKY74400 re-centers the UHF VCO frequency range each time the synthesizer is programmed. This proprietary Skyworks technique, called Digital Frequency Centering (DFC) extends the VCO frequency coverage, speeds up settling time, and ensures robust performance since the VCO is always operated at the center of its tuning range. Each time the synthesizer is programmed, the DFC circuit is activated and the VCO is centered to the programmed frequency in less than 20 μs. After this, normal Phase Locked Loop (PLL) operation is resumed and the fine settling of the frequency is finalized. DFC typically adjusts the VCO center frequency to within a few MHz and no more than 5 MHz offset, and presets the tuning voltage to the center of the range before the PLL takes over.

This speeds up frequency settling and ensures that the PLL control voltage never operates close to the rails. DFC is the result of an adaptive circuit that corrects for any VCO center frequency errors caused by variations of the integrated VCO circuit such as temperature, supply voltage, or aging. The VCO can be centered at any frequency in the range from 990 MHz to 1550 MHz. Once centered, the VCO has a minimum analog tuning range of 20 MHz. No calibration or data storage is needed for DFC operation. It is activated by one of two events:

- When the synthesizer is programmed, the rising edge of the LE signal starts the DFC cycle
- When the SXENA signal level is changed from low to high, which enables the synthesizer, the rising edge of the SXENA signal starts the DFC cycle.

C. Integrated Loop Filters

Both loop filters (for the UHF PLL and for the transmit PLL) are fully integrated. Several adjustments can be made to the loop filter transfer functions. The UHF loop filter has two synchronized charge pumps. The frequency of the “zero“ factor (z1) in the PLL phase transfer function can be adjusted by varying the charge pump currents, and the values of the internal R3 resistor and C3 capacitor.

Charge Pump Current Compensation for Constant PLL Bandwidth The VCOs in the SKY74400 use Skyworks DFC technique. The nature of the DFC circuit increases the VCO control sensitivity (KVCO) as the VCO frequency is increased. Without any compensation, this leads to an increase in the PLL loop gain and an increased loop bandwidth for higher frequencies. In a classical PLL design, KVCO is typically regarded as a constant. In this case, the loop gain decreases with increased frequency as the division ratio of the loop is increased proportionally to frequency. Since it is usually desirable to keep the loop bandwidth constant over the frequency range of interest, the SKY74400 includes a circuit that compensates the charge pump current to keep the overall loop gain constant.

Charge pump current compensation for the UHF PLL can be programmed to one of three settings (nominal, high, or low) or the charge pump current can be programmed to a constant value without compensation. Refer to the Skyworks Programming Guide SKY74117 RF Transceiver for Standalone Devices or Embedded MCMs for details.

D. Crystal Oscillator

A 26 MHz crystal oscillator provides the reference frequency for the synthesizer. the oscillator uses an external 26 MHz crystal to generate an accurate oscillation frequency. The reference frequency can be changed through coarse-tuning with an integrated capacitor array or fine-tuning with the integrated varactor diode. The oscillator is coarse-tuned by switching in and out (using a digital word programmed with the serial interface) the capacitor network (CAP_A and CAP_B) located at the input of the integrated buffer. The oscillator is fine-tuned by providing a tuning voltage to the integrated varactor diode.

An output buffer is provided to drive the baseband circuitry. The frequency of the output is determined by the FREQ_SEL signal. When this signal is connected to ground, the output is 13 MHz; when connected to VCC or left floating, the output is 26 MHz. The oscillator core powers up when the SXENA signal is set to logic 1.

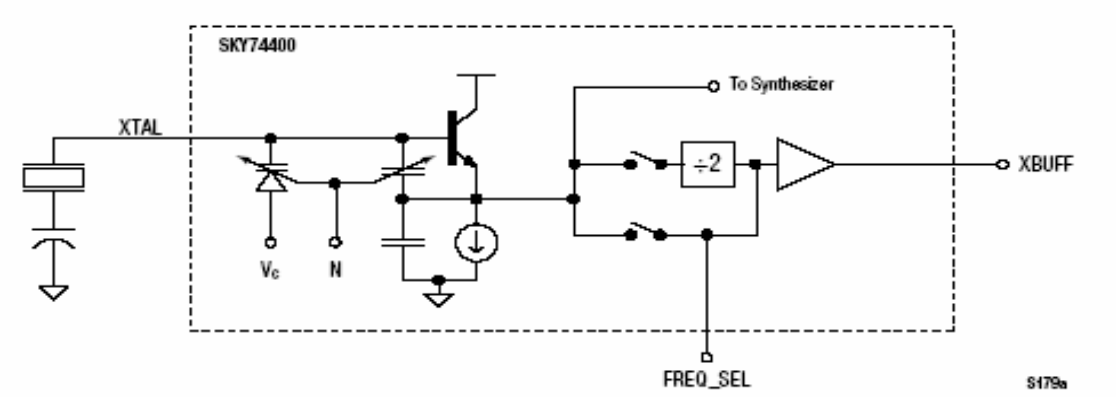


Figure. 3-2 Crystal Oscillator BLOCK DIAGRAM

(3) Transmitter Part

To minimize the post-PA filtering requirements and any additional post-power amp losses, the transmit path consists of a vector modulator and a frequency translation loop. The translation loop consists of the following:

- PFD and charge pump
- In-loop modulator
- One programmable divider
- Integrated transmit loop filter
- Two transmit VCOs and output buffers

A. Translation Loop

The translational loop includes a vector modulator and a frequency translation loop to minimize the post-PA filtering requirements. the loop functions as a PLL with a mixer in the feedback path and a modulator in the reference path. The loop provides a PFD and charge pump, integrated loop filters, two transmit VCOs, down-conversion mixer in the feedback path, a frequency divider for frequency plan flexibility, and the modulator. The mixers in the feedback path provide either high side or low side injection to provide flexibility in the frequency plan. The modulator in the reference path uses a vector summing technique to reject the unwanted image and to also sufficiently attenuate the 3rd and 5th harmonics. Therefore, no external IF filters are required. The loop filter required for the transmit VCOs is integrated in the SKY74400.

B. Transmit VCOs

Two integrated transmit VCOs are designed to meet GSM850, EGSM900, DCS1800, and PCS1900 requirements. The transmit VCOs use the same DFC technique as the synthesizer section to lock the translation loop. The rising edge on TXENA initializes the transmit DFC. The output buffers feed the signal to the PAs. Two transmit buffers are provided, one for the low band VCO and the other for the high band VCO.

C. Power Amplifier (PA)

The PA functionality of the SKY74400 consists of separate GSM850/EGSM900 and DCS1800/PCS1900 blocks, impedancematching circuitry for 50 Ω output impedances, and a PAC block with an internal currentsense resistor. The custom BiCMOS integrated circuit provides the internal PAC function and interface circuitry. Fabricated onto a single Gallium Arsenide (GaAs) die, one Heterojunction Bipolar Transistor (HBT)

PA block supports the GSM850 and EGSM900 bands, and the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The RF output ports of the SKY74400 are internally matched to a 50 Ω load to reduce the number of external components for a quad-band design. The PA also contains band-select switching circuitry to select GSM (logic 0) or DCS/PCS (logic 1) as determined from the BAND_SELECT signal. The VBAT pin connects to an internal current-sense resistor and interfaces to an iPAC function, which is insensitive to variations in temperature, power supply, and process.

The ENABLE input allows initial power-on of PA circuitry to minimize battery drain.

(4) Low Drop-Out (LDO) Linear Voltage Regulators

The SKY74400 includes integrated LDO linear voltage regulators to eliminate the need for a separate power management integrated circuit or discrete voltage regulators. Each functional block in the SKY74400 includes a separate, internal LDO voltage regulator.

3.2 13 MHz Clock (VCTCXO, X400)

The 13 MHz clock(X400) consists of a TCXO(Temperature Compensated Crystal Oscillator) which oscillates at a frequency of 13 MHz. It is used within the SKY74400, analog base band chipset (U100, AD6535), digital base band chipset (U101, AD6527B).

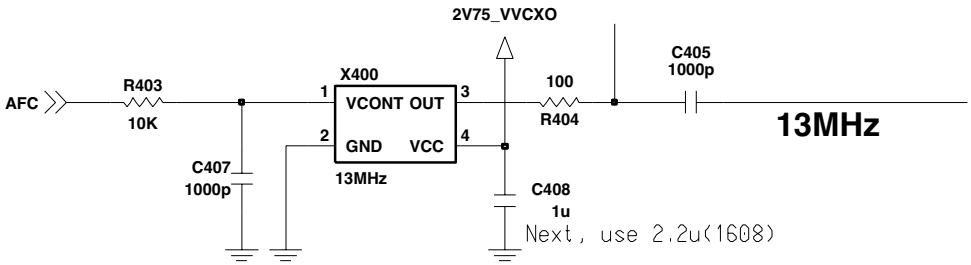


Figure 3-3 VCTCXO CIRCUIT DIAGRAM

3.3 Switchplexer for Triband(FL400)

	Vc1	Vc2	Vc3	Current
EGSM-Tx	0.0-0.1V	0.0-0.1V	2.3-3.0V	10mA Max
EGSM-Rx	0.0-0.1V	0.0-0.1V	0.0-0.1V	≈ 0mA
DCS/PCS-Tx	0.0-0.1V	2.3-3.0V	0.0-0.1V	10mA Max
DCS-Rx	0.0-0.1V	0.0-0.1V	0.0-0.1V	≈ 0mA
PCS-Rx	2.3-3.0V	0.0-0.1V	0.0-0.1V	10mA Max

Table 3-1 FEM CONTROL LOGIC

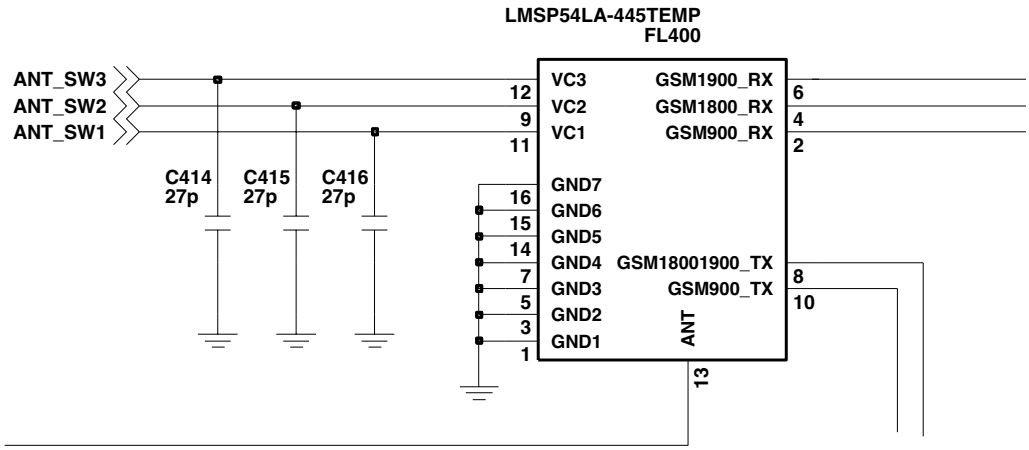


Figure 3-4 FEM CIRCUIT DIAGRAM

3.4 Digital Main Processor (AD6527B, U101)

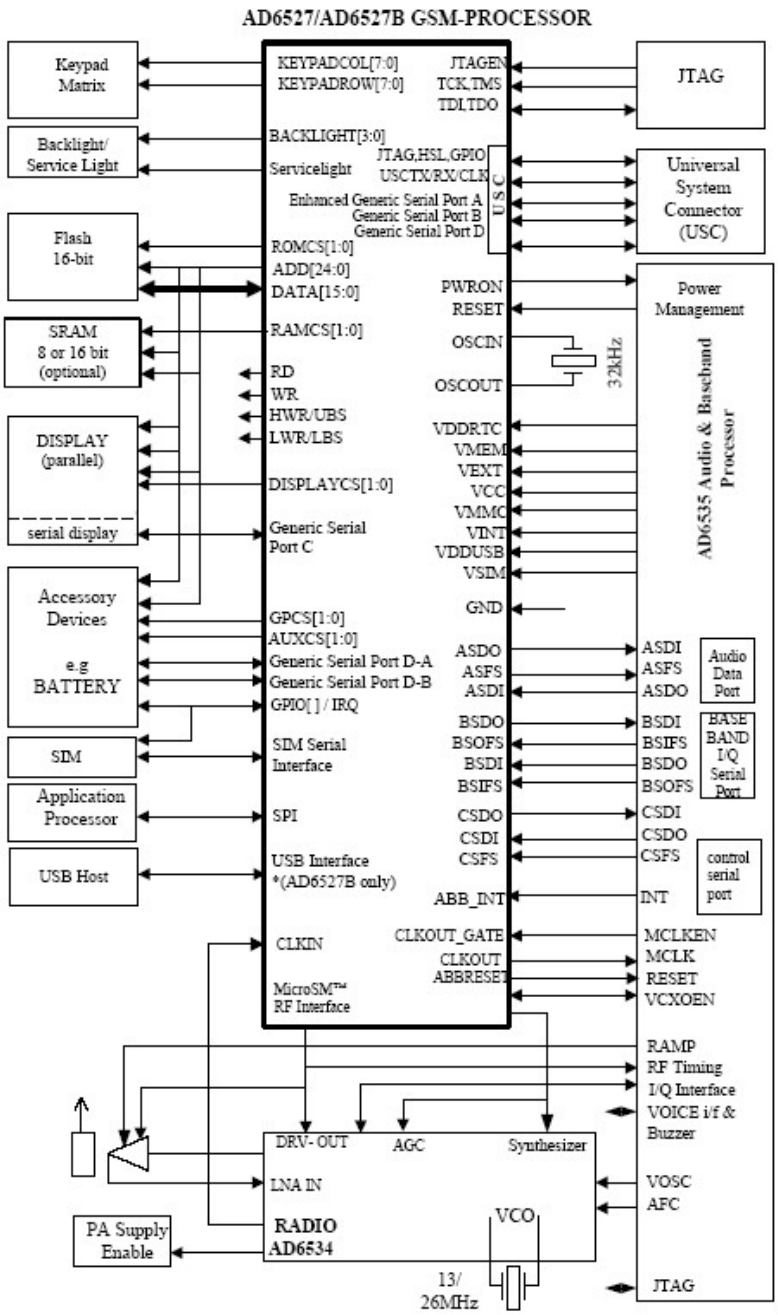


Figure 3-5. SYSTEM INTERCONECTION OF AD6527 EXTERNAL INTERFACE

• AD6527 is an ADI designed processor.

• AD6527 consists of

1. Control Processor Subsystem
   - 32-bit ARM7TDMI Control Processor
   - 58.5 MHz operation at 1.7V
   - On-board 16KB instruction/Data Cache
   - 1 Mbits of on-chip System SRAM

2. DSP Subsystem
   - 16-bit Fixed Point DSP Processor
   - 91 MIPS at 1.7V
   - 16K word Data and 16K word Program SRAM
   - 4K word Program Instruction Cache
   - Architecture supports Full Rate, Enhanced Full Rate, Half Rate, and AMR Speech Encoding/Decoding Algorithms

3. Peripheral Subsystem
   - Shared on-chip peripheral and off-chip interface:
   - Support for Burst and Page Mode Flash
   - Support for Pseudo SRAM
   - Ciphering module for GPRS supporting GAE1 and GAE2 encryption algorithms
   - Parallel and Serial Display Interface
   - 8 x 8 Keypad Interface
   - Four independent programmable backlight plus One Service Light
   - 1.8V and 3.0V, 64 kbps SIM interface
   - Universal System Connector Interface
   - Slow, Medium and Fast IrDA transceiver interface
   - Enhanced Generic Serial Port
   - Dedicated SPI interface
   - Thumbwheel Interface
   - JTAG Interface for Test and In-Circuit Emulation

4. Other
   - Supports 13 MHz and 26 MHz Input Clocks
   - 1.8V Typical Core Operating Voltages
   - 204-Ball LFBGA(mini-BGA) Package

5. Applications
   - GSM900/DCS1800/PCS1900/PCS850 Wireless Terminals
   - GSM Phase 2+ Compliant
   - GPRS Class 12 Compliant
   - Multimedia Services(MMS)
   - Extended Messaging System(EMS)

3.4.1 Interconnection with external devices

A. RTC block interface

Countered by external X-TAL
The X-TAL oscillates 32.768KHz

B. LCD module interface

The LCD module is controlled by AD6527B(U101),DBB.
In operating mode, the AD6527B(U103) controls the LCD module through _LCD_CS, LCD_DIM_CTRL, LCD_RESET, _WR, 2V8_VMEM, LCD_ID, LCD_BL_EN.

Signals	Description
_LCD_CS	MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
LCD_DIM_CTRL	It controls dimming mode of LCD module.(GPIO_5)
LCD_RESET (GPIO 15)	This pin resets LCD module. This signal comes from DBB directly.
_WR	Enable writing to LCD Driver.
2V8_VMEM	2.8V voltage is supplied to LCD driver IC.
LCD_ID(GPIO_16)	It determines the maker of LCD module.
LCD_BL_EN	It controls back-light of LCD module.(GPO_23)

Table 3-2. LCD CONTRON SIGNALS DISCRIPTION

The backlight of LCD module is controlled by DBB via AAT2806IXN-4.5-T1 , U402. The control signals related to Backlight LED are given bellow.

Signals	Description
LCD_DIM_CTL (GPO 5)	Control LCD backlight level in 16 steps
LCD_LED_CTL	Control LCD LED
LCD_LED_GND	
LCD_BL_EN	It controls back-light of LCD module.(GPO_23)

Table 3-3. DESCRIPTION OF LCD BACKLIGHT LED CONTROL

C. RF interface

The AD6527B control RF parts through PA_BAND, ANT_SW1, ANT_SW2, ANT_SW3 , CLKON , PA_EN, S_EN, S_DATA, S_CLK, RF_PWR_DWN.

Signals	Description
PA_BAND (GPO 17)	PAM Band Select
ANT_SW1 (GPO 9)	Antenna switch Band Select
ANT_SW2 (GPO 10)	Antenna switch Band Select
ANT_SW3 (GPO 11)	Antenna switch Band Select
CLKON	RF LDO Enable/Disable
PA_EN (GPO 16)	PAM Enable/Disable
S_EN (GPO 19)	PLL Enable/Disable
S_DATA (GPO 20)	Serial Data to PLL
S_CLK (GPO 21)	Clock to PLL
RF_PWR_DWN(GPO 4)	Power down Input

Table 3-4. RF CONTRON SIGNALS DISCRIPTION

D. SIM interface

The AD6527B provides SIM Interface Module. The AD6527 checks status periodically during established call mode whether SIM card is inserted or not, but it doesn't check during deep Sleep mode. In order to communicate with SIM card, 3 signals SIM_DATA, SIM_CLK, are required. The descriptions about the signals are given by bellow Table 3-6 in detail.

Signals	Description
SIM_DATA	This pin receives and sends data to SIM card. This model can support only 3.0 volt interface SIM card.
SIM_CLK	Clock 3.25MHz frequency.
SIM_RST (GPIO_23)	Reset SIM block

Table 3-5. SIM CONTRON SIGNALS DISCRIPTION

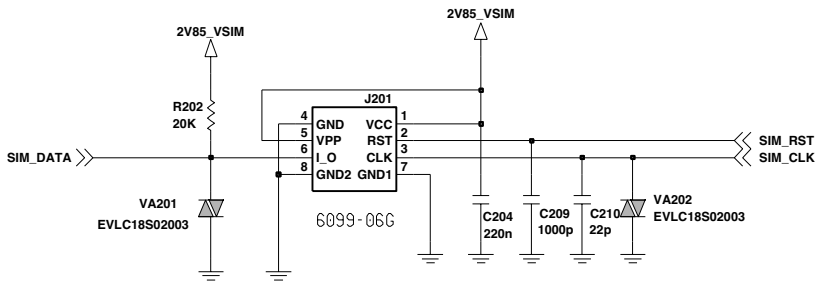


Figure 3-6. SIM Interface of AD6527B

E. Key interface

Include 5 column , 5 row and additional GPIO 35 for KEY_ROW5. The AD6527B detects whether key is pressed or not by using interrupt method.

F. AD6535 Interrupt

AD6535 provides an active-high interrupt output signal. Interrupt signals are generated by the Auxiliary ADC, audio, and charger modules.

3.4.2 AD6527B Architecture

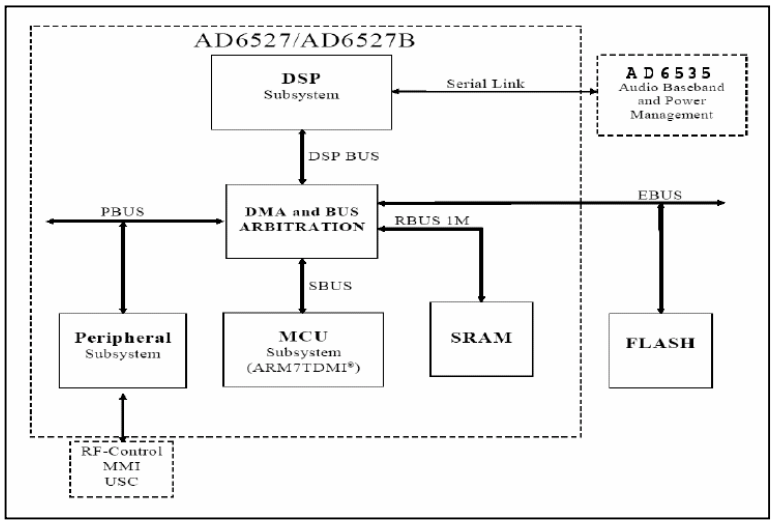


Figure 3-7. AD6527B Architecture

The internal architecture of AD6527B is shown above Figure 3-7. AD6527 regroups three main subsystems connected together through a dynamic and flexible communication bus network. It also includes onboard system RAM (SRAM) and interfaces with external Flash Memory, Baseband converter functions, and terminal functions like MMI, SIM and Universal System Connector (USC).

The Digital Signal Processing (DSP) subsystem primarily hosts all the speech processing, channel equalization and channel codec functions. The code used to implement such functions can be stored in external Flash Memory and dynamically downloaded on demand into the DSP's program RAM and Instruction Cache.

The micro-controller subsystem supports all the GSM terminal software, including the layer 1, 2 and 3 of the GSM protocol stack, the MMI, and applications software such as data services, test and maintenance. It is tightly associated with on-chip system SRAM and also includes boot ROM memory with a small dedicated routine to facilitate the initialization of the external Flash Memory via code download using the on-chip serial interface to the external Flash Memory interface.

The peripheral subsystem is composed of system peripherals such as interrupt controller, real time clock, watch dog timer, power management and a timing and control module. It also includes peripheral interfaces to the terminal functions: keyboard, battery supervision, radio and display. Both the DSP and the MCU can access the peripheral subsystem via the peripheral bus (PBUS).

For program and data storage, both the MCU subsystem and the DSP subsystem can access the on chip system SRAM and external memory such Flash Memory. The access to the SRAM module is made through the RAM Bus (RBUS) under the control of the bus arbitration logic. Similarly, access to the Flash Memory is through the parallel External Bus (EBUS).

3.5 Analog Main & Power Management Processor (AD6535, U100)

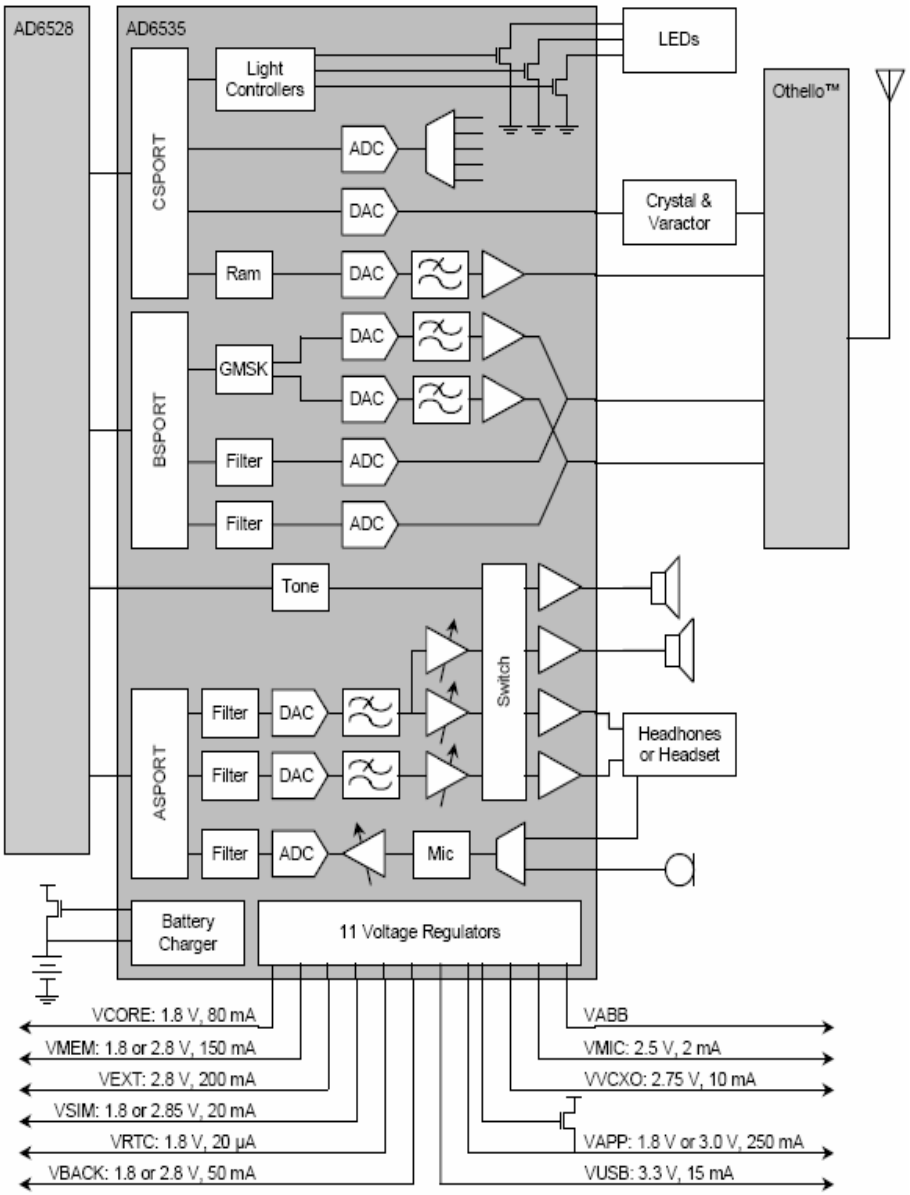


Figure 3-8. AD6535 FUNCTIONAL BLOCK DIAGRAM

• AD6535 is an ADI designed Analog Baseband processor. AD6535 covers the processing GMSK modulation interface, Aux ADC, Voice signal processing and Power Management.

• AD6535 consists of

1. BB Transmit section
   • GMSK Modulation
   • I-channel & Q-channel Transmit DACs and Filters
   • Power Ramping DAC

2. BB Receive section
   • I-channel & Q-channel Receive ADCs and Filters

3. Auxiliary section
   • Voltage Reference
   • Automatic Frequency Control DAC
   • Auxiliary ADC
   • Light Controllers

4. Audio Section
   • 8 kHz & 16 kHz Voiceband Codec
   • 48 kHz Monophonic DAC
   • Power Amplifiers

5. Power Management section
   • Voltage Regulators
   • Battery Charger
   • Battery Protection

6. Digital Processor section
   • Control, Baseband, and Audio Serial Ports
   • Interrupt Logic

3.5.1 Baseband Transmit Section

1. The AD6537B Baseband Transmit Section is designed to support GMSK for both single-slot and multi-slot application.
2. The AD6535 includes a digital GMSK modulator which is used for GSM application. The GMSK modulator uses a ROM lookup table to modulate the serial data stream ffrom the BSPORT. The GMSK modulator is based on 3GPP TS 45.004 ver.5.1.0 Release 5

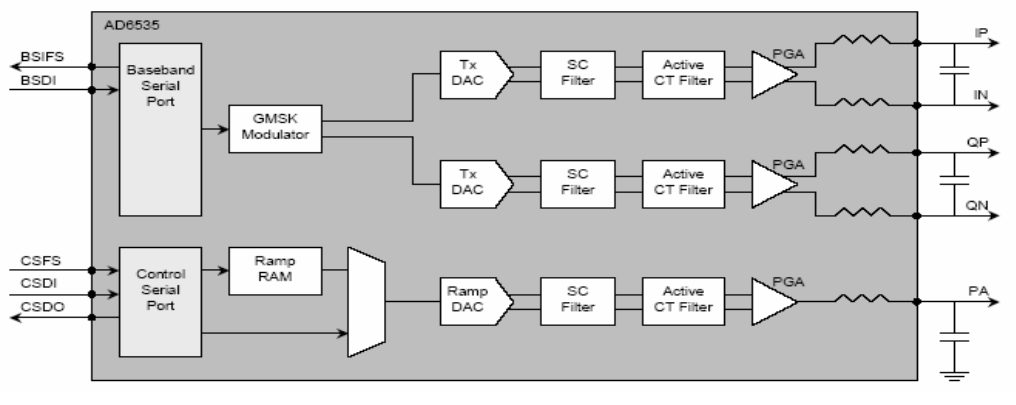


Figure 3-9. AD6535 BASEBAND TRANSMIT SECTION

3.5.2 Baseband Receive Section

1. This section consists of two identical ADC channels that process baseband in-phase(I) and quadrature(Q) input signals.

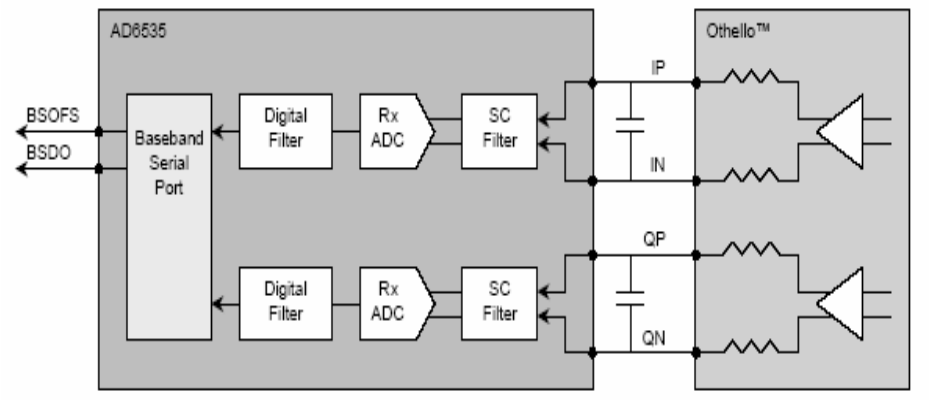


Figure 3-10. AD6535 BASEBAND RECEIVER SECTION

3.5.3 Auxiliary Section

1. This section includes an Automatic Frequency Control(AFC) DAC, voltage reference buffers, an Auxiliary ADC, and light controllers.
   • AFC DAC: 13 bits

2. This section also contains AUX ADC and Voltage Reference
   • IDAC: 10 bits
   • The Auxiliary ADC provides :
   - Two differential inputs for temperature sensing.
   - A differential input for the battery charger current sensor

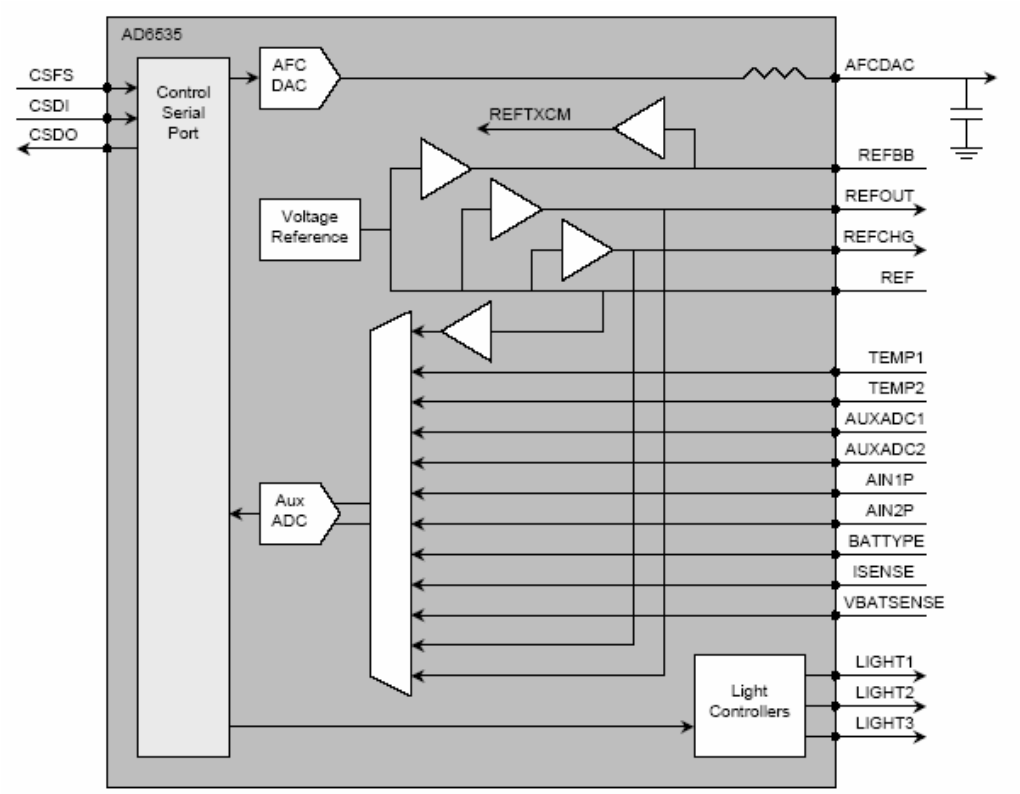


Figure 3-11. AD6535 AUXILIARY SECTION

3.5.4 Audio Section

1. The AD6535 Audio section supports communications and personal audio applications.
2. The Audio Section provides an audio codec with two digital-to-analog converter, a ring tone volume controller, a microphone interface, and analog input and output channels.

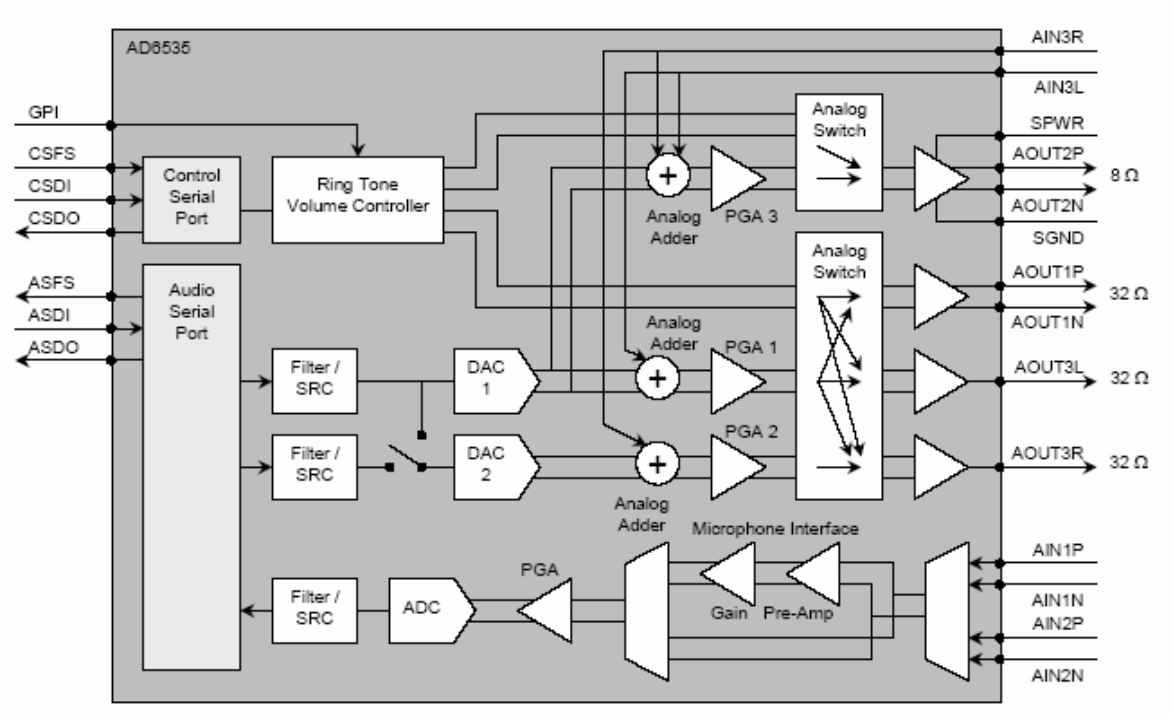


Figure 3-12. AD6535 AUDIO SECTION

3.5.5 Power Management

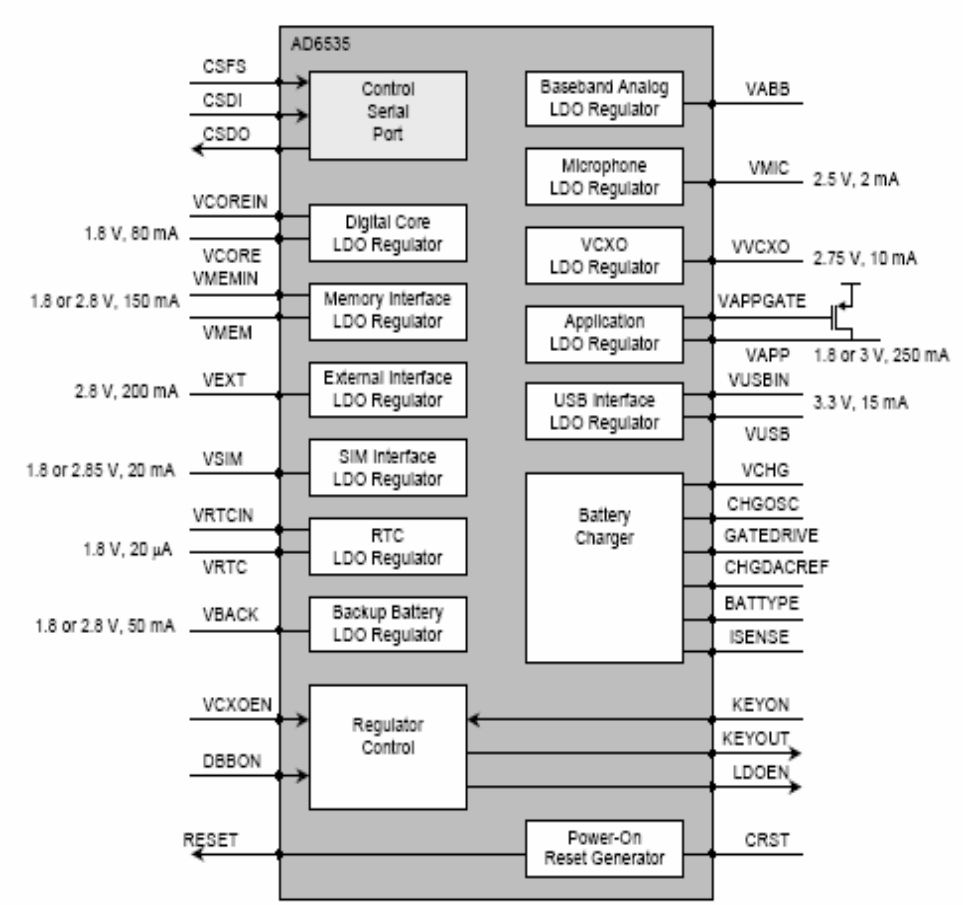


Figure 3-13. AD6535 POWER MANAGEMENT SECTION

1. Power up sequence logic

1. The AD6535 controls power on sequence
2. Power on sequence
   - If a battery is inserted, the battery powers the 8 LDOs.
   - Then if PWRONKEY is detected, the LDOs output turn on.
   - REFOUT is also enabled
   - Reset is generated and send to the AD6527B

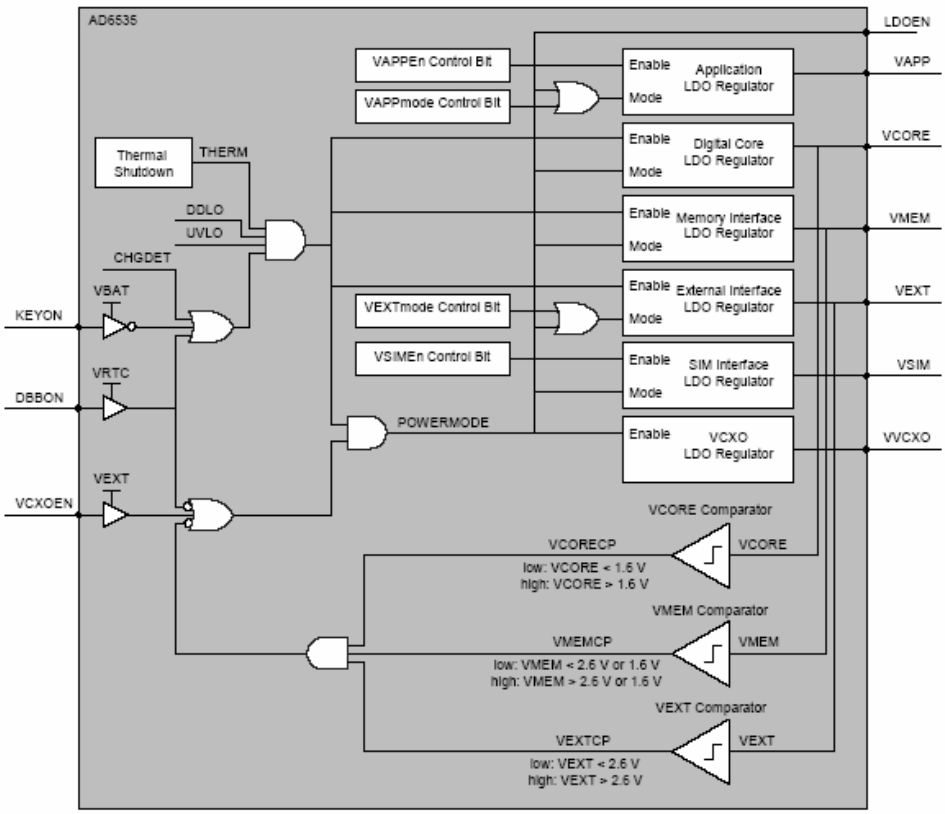


Figure 3-14. AD6535 POWER MODE LOGIC

2. LDO Block

1. There are 8 LDOs in the AD6535.
   - VCORE : supplies Digital baseband Processor core and AD6535 digital core
   - VMEM : supplies external memory and the interface to the external memory on the digital baseband processor (1,8V or 2.8V, 150mA)
   - VEXT : supplies Radio digital interface and high voltage interface (2.8V, 170mA)
   - VSIM : supplies the SIM interface circuitry on the digital processor and SIM card (2.85V, 20mA)
   - VRTC : supplies the Real-Time Clock module (1.8 V, 20 μA)
   - VABB : supplies the analog portions of the AD6537B
   - VMIC : supplies the microphone interface circuitry (2.5 V, 1 mA)
   - VVCXO : supplies the voltage controlled crystal oscillator (2.75 V, 10 mA)
   - VBACK : charges the backup battery and supplies the RTC regulator (2.8V, 1.8V)
   - VAPP : supplies application co-processors such as a touch screen digitizer (3.0V, 1.8V)
   - VUSB : supplies the USB interface.

3.6 Charging IC (ISL6299, KEY PCB U201)

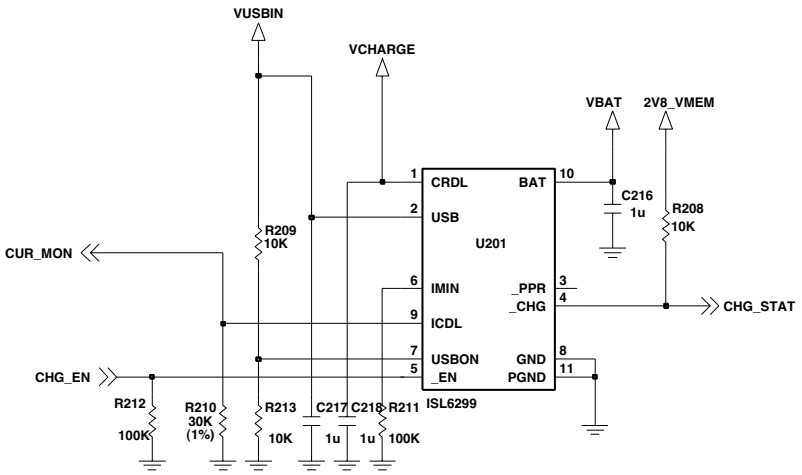


Figure 3-15. CIRCUIT FOR BATTERY CHARGING

The ISL6299 is designed for a single-cell Li-ion or Li-polymer battery charging circuit that accepts both a USB port and a desktop cradle as its power source.

Input Auto Selection

When both input sources are present, the charger selects only one power source to charge the battery.
When the CRDL input is higher than the POR threshold, CRDL is selected as the power source. Otherwise the USB input is selected. If the CRDL input voltage is below the battery voltage but the USB input voltage is higher than the battery voltage, then the USB input is used to charge the battery. The control circuit always breaks both internal power devices before switching from one power source to the other to avoid a cross conduction of both power MOSFETs.

USB Charge Current

When the USB port is selected as the power source, the charge current enabled by the logic input at the USBON pin. When the USBON is driven to logic LOW, the charger is disabled. When the USBON is driven to logic HIGH, the charge current is fixed at a typical value of 380mA. Thus for the USB input, the USBON pin has a similar function as the EN pin. The following table describes the USB charge control by both the USBON pin and EN pin The USBON pin is equivalent to a logic LOW when left floating. Typically the P-channel MOSFET for the USB input has an rDS(ON) of 700m at room temperature. With a 380mA charge current, the typical head room is 260mV. Thus, if the input voltage drops to a level that the voltage difference between the USB pin and the BAT pin is less than 260mV, the rDS(ON) becomes a limiting factor of the charge current; and the charger drops out the constant current regulation.

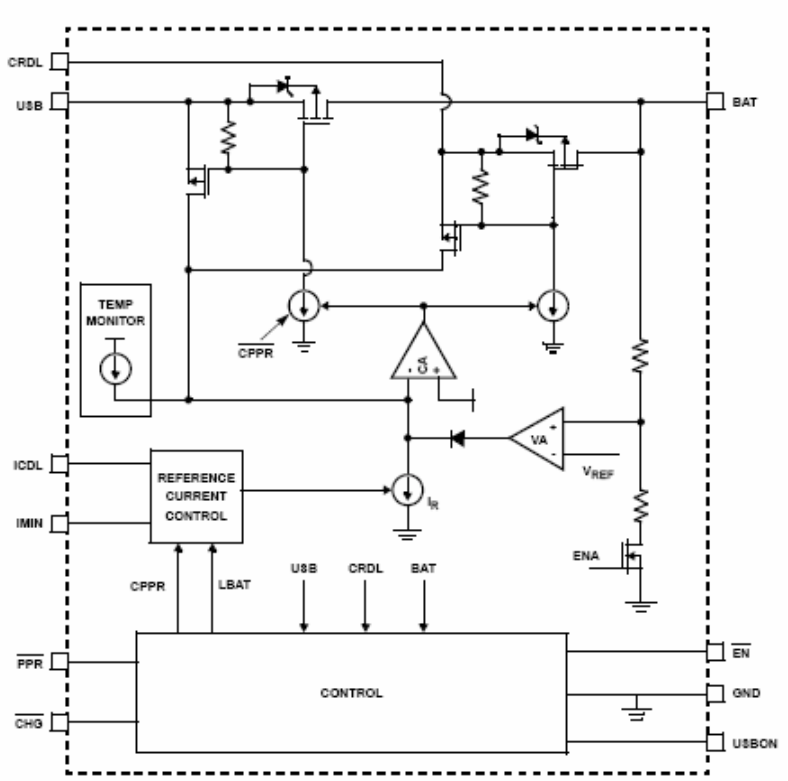


Figure 3-15. BLOCKDIAGRAM

Cradle Charge Current

The cradle charge current is enabled by the EN pin only, the USBON pin has no control on the cradle charge current. The cradle charge current is programmed with the external resistor connected between the ICDL pin and the GND pin. The current can be calculated with one of the equations given in the ICDL pin description. Two equations are used for the cradle current calculation, each corresponds to a different range of currents. The typical rDS(ON) of the P-channel MOSFET for the CRDL input is 600mΩ at room temperature. When the head room between the input and output voltages is small, the actual charge current, similar to the USB case, could be limited by the rDS(ON). On the other hand, if the head room between the input and output voltages is large, the charge current may be limited by the thermal foldback threshold.

Floating Charge Voltage

The floating voltage during the constant voltage phase is 4.2V. The floating voltage has an 1% accuracy over the ambient temperature range of -40˚C to 70˚C.

Trickle Charge Current

When the battery voltage is below the minimum battery voltage VMIN given in the electrical specification, the charger operates in a trickle/preconditioning mode, where the charge current is typically 14% of the programmed charge current for the cradle input. If power comes from the USB input, the trickle mode current is approximately 53mA.

End-of-Charge Indication

threshold, which is programmable for the cradle input and fixed for the USB input. Once the end-of charge-current is reached, the CHG status will be latched. The latch can be reset at one of the following conditions:

1. The part is disabled and re-enabled
2. The selected input source has been removed and reapplied
3. The USBON turns LOW and turns back to HIGH for the USB input
4. The BAT pin voltage falls below the CV mode threshold

Regardless of the CHG pin status, however, the charger does not turn off as long as an input power source is attached.

Power Presence Indication

When either the USB or the cradle input voltage is above the POR threshold, the PPR pin internal open-drain MOSFET turns on indicating the presence of input power.

Power-Good Range

Even if there is a power present, the charger will not deliver any current to the output if the powergood conditions are not met. The following two conditions together define the power-good voltage range:

1. VCDRL or VUSB > VPOR
2. VCDRL or VUSB - VBAT > VOS

where the VOS is the offset voltage for the input and output voltage comparator, discussed shortly.
Both VPOR, VOS have hysteresis, as given in the Electrical Specification table.
The charger will not charge the battery if the input voltage does not meet the power-good conditions.

Thermal Foldback (Thermaguard™)

The thermal foldback function reduces the charge current when the internal temperature reaches the thermal foldback threshold, which is typically 100˚C. This protects the charger from excessive thermal stress at high input voltages.

3.7 CAMERA IC(AIT811, MAIN ,U202)

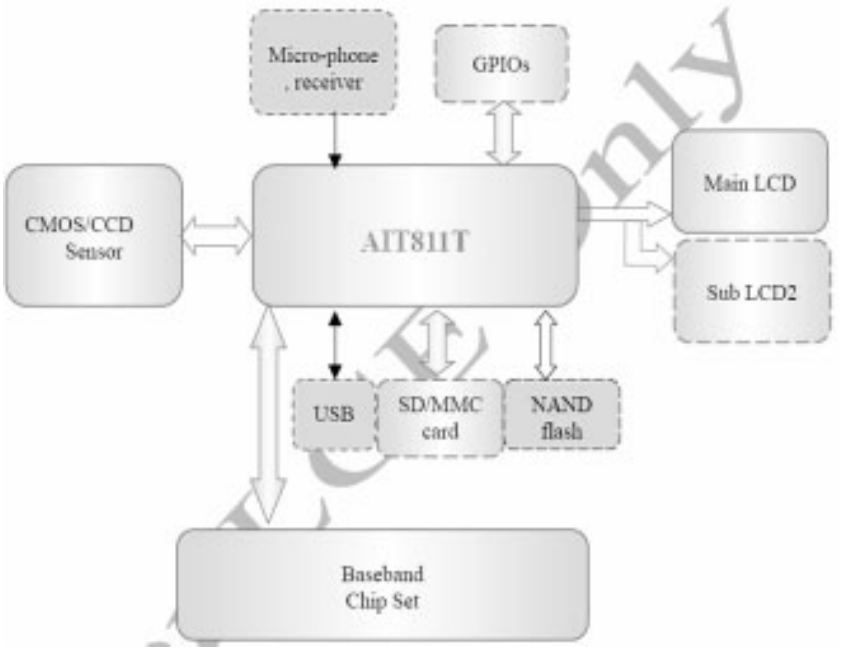


Figure 3-15. AIT811 APPLICATION BLOCKDIAGRAM

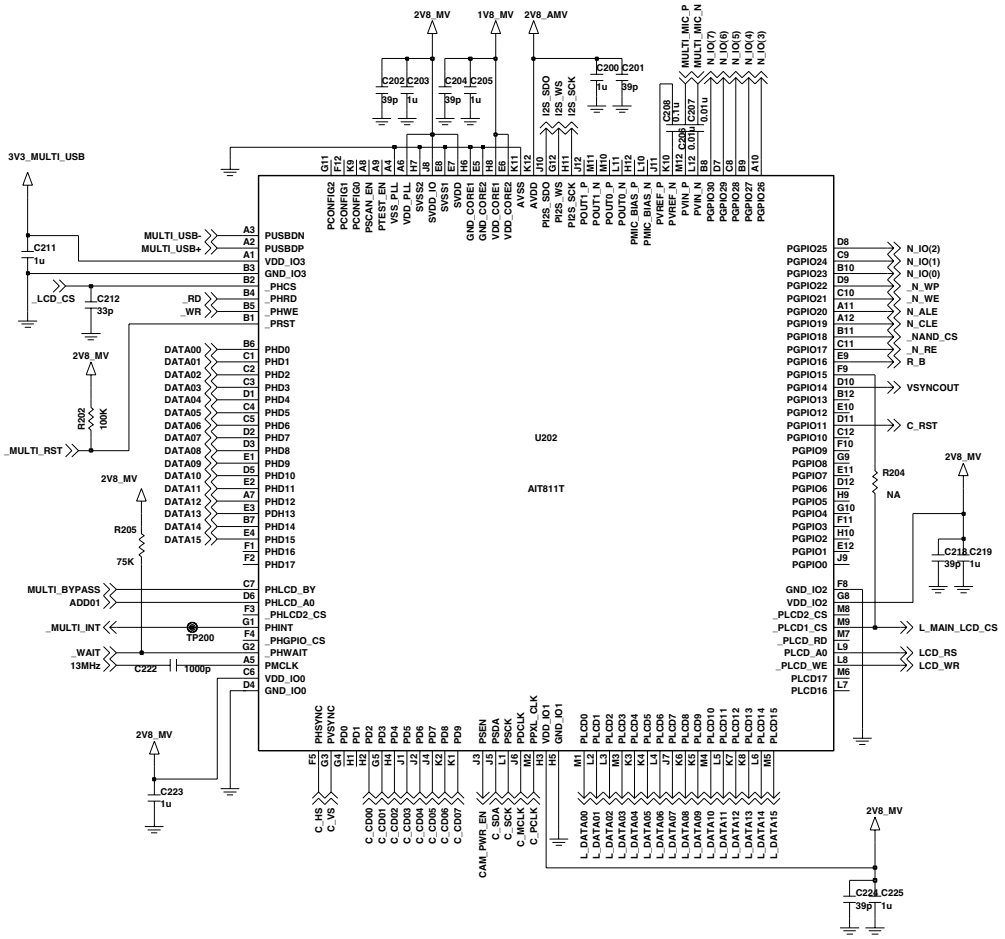


Figure 3-24. AIT811 CIRCUIT

3.8 MIDI IC(YMU787,U300)

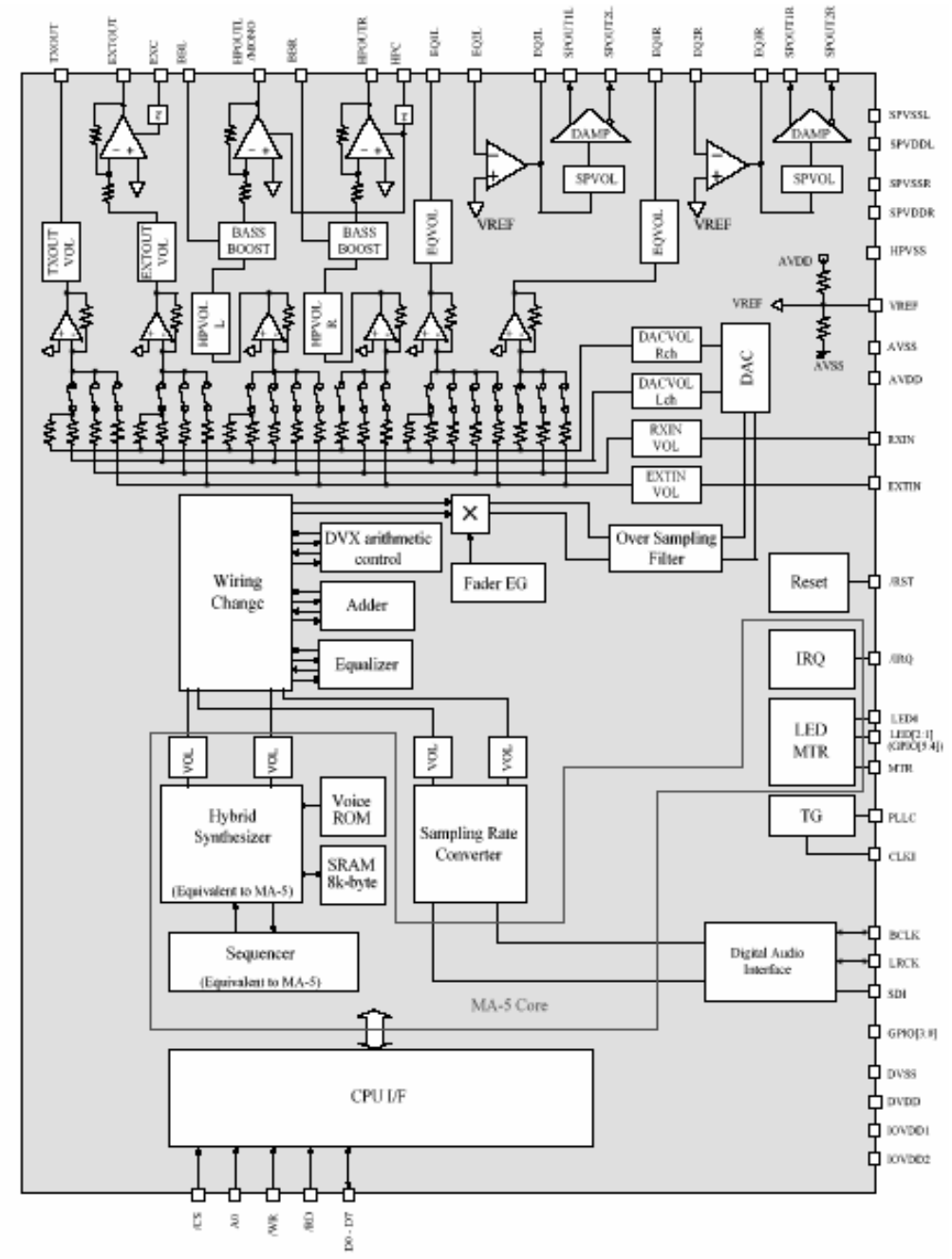


Figure 3-24. YMU787 BLOCKDIAGRAM

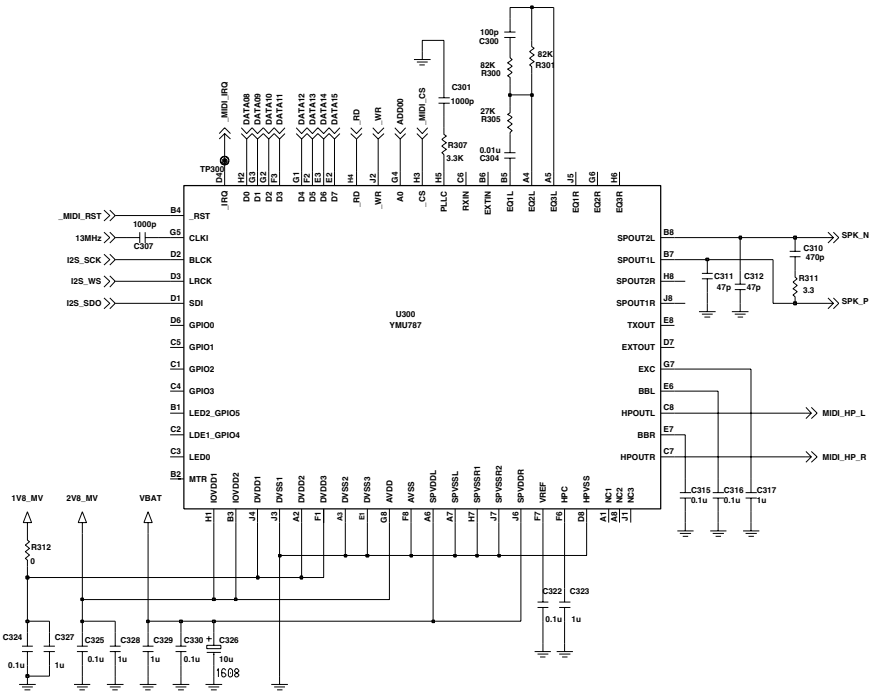


Figure 3-24. YMU787 CIRCUIT DIAGRAM

CPU INTERFACE

CPU interface is an 8-bit parallel.

4 control signal(/wr,/rd,/cs,A0 pin), 8 data bit(D0 to D7), and 1 interrupt pin(/IRQ), totaling 13 pins are connected to the external CPU. This block controls the writing and reading of data by the input polarity of control signal

INTERFACE REGISTER

This registeris able to access directly ffrom the external CPU. There are 2 bytes spaces. The Intermediate register can be accessed through the interface register.

INTERMEDIATE REGISTER

This register is accessed through the Interface register.

It is composed to access a latter control register and ROM/SRAM through Intermediate register.

This register is called “Intermediate register” since this exists in the middle of the interface register and the Control register.

In the Intermediate register, there are some registers to control various functions.

3. TECHNICAL BRIEF

CONTROL REGISTER;ROM/SRAM

The Control register and ROM/SRAM are accessed from"Instantaneous write register","Delayed write register", and "Instantaneous read register"in the intermediate register.
In the control register, there is a register to control the following synthesizer mainly.
The voice parameter for FM(GM 128 voices+DRUM 40 voices)and wave data for WT are stored in ROM. SRAM is used at the download of arbitary FM voice parameter and Wave data for WT. moreover, it is used as storing buffer at the stream playback of PCM/ADPCM.

FIFO

This is an abbreviation of "First Input First Output" means the memory from which data is read in order of data written.
There are 2 paths to write into FIFO in the Intermediate register.The"instantaneous write path" is for accessing the control register and ROM/SRAM immediately,also "Delayed write path"is for accessing the control register after managing time through the sequencer.FIFO size of Instantaneous path is 64 byte, and its size of Delayed path is 512-byte.

SEQUENCER

This is for interpreting the contents of data which is written into the "Delayed write path" Generally, "Music data" is written into the Delayed write path. It interprets the contents of music data and controls the synthesizer after sequencer, and then plays the music.

Hybrid synthesizer

This device contains a built in polyphonic synthesizer that adopts a stereophonic hybrid system that generate up to 64tones.
FM synthesizer, WT synthesizer, stream playback, HV synthesizer, and AL synthesizer are available.

DIGITAL AUDIO INPUT INTERFACE

This is a three wires type serial interface.The data length is 16bits.

DPLL SECTION/SAMPLING RATE CONVERTER SECTION

Sampling frequencies of signals from the digital audio interface section are changed into 48Khz.

DIGITAL EQUALIZER SECTION

This is a digital equalizer. Voice of signals from the Hybrid Synthesizer section and voice of digital audio signals are adjusted.

DVX ARITHMETIC CONTROL

Two-channel virtual speaker image function that is based on DVX technology makes it possible to create natural stereo sound under the two closely spaced speakers.

OVER SAMPLING FILTER

4 Times of over sampling filter. It converts a signal of sampling frequency 48Khz into a signal of 192Khz,and then send to DAC

GENERAL PARALLEL I/O PORT SECTION(GPIO)

There are six general parallel I/O ports. It is possible to read and write from the Intermediate register.

LED,VIBRATOR CONTROL

It is possible to synchronize an LED and vibrator with a play, and to control. Asynchronous control With a play is also supported. It supports 3 color LED control and it is possible to display 7 colors In maximum.

CLOCK GENERATING BLOCK

This device supports a clock input ranging from 1.5Mhz to 27Mhz.
It is a block to generate a clock which is needed inside of LSI in the PLL.

DAC

It converts digital signals from a synthesizer and a digital audio section into analog signals.
Its resolution is 16bits.

ANALOG LINE INPUT SECTION(EXTIN,RXIN)

External audio signal and receiver audio signal are inputted.
There is a Volume to adjust the level in each.

MIXER SECTION

Selection of an input source(DAC output, RXIN, and EXTIN) against each analog output(SPOUT, HPOUT,EXTOUT,TXOUT) and mixing are performed.

EQ AMPLIFIER SECTION

The change of filter characteristic and gain is possible by adjusting the resistors and external parts.

SPEAKER AMPLIFIER SECTION

The two digital speakers amplifier, which has a maximum output power of 500mW at SPVDDL/R=3.6V and RL=8ohm, is integrated in this device. There is a volume to adjust output level in the first stage of amplifier.

HEADPHONE AMPLIFIER SECTION(HPOUT)

This is an amplifier for stereophonic headphone(RL=16ohm)output.
When it is used as a monaural output, Rch becomes power-down.
In the previous part of it, there are a volume and a bass-boost circuit.

EXTERNAL OUTPUT AMPLIFIER SECTION(EXTOUT)

This is an amplifier for external output(RL=600ohm)
In the previous part of it, there is a volume to adjust the output level

ANALOG LINE OUTPUT SECTION(TXOUT)

This is monaural line output(RL=10kohm)
There is a volume to adjust the output level.

3.9 Keypad Switches and Scanning

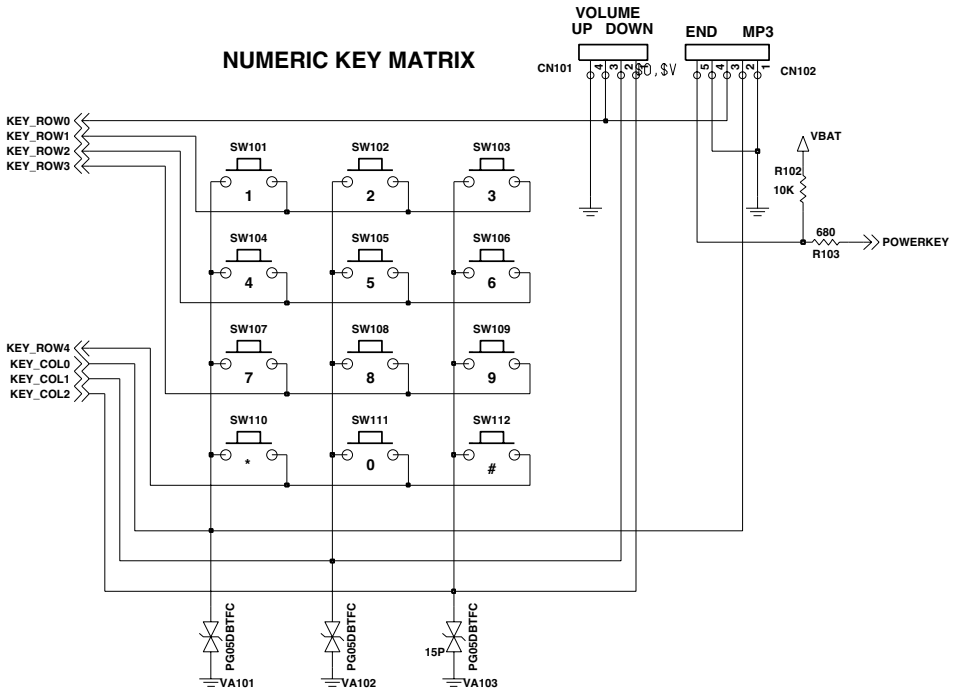


Figure 3-27. Keypad Switches and Scanning

3.10 Microphone

The microphone is placed to the rear cover and contacted to top of Key PCB. The audio signal is passed to AIN1P and AININ pins of AD6535. The voltage supply VMIC is output from AD6535, and is a biased voltage for the AIN2P. The AIN2P and AIN2N signals are then A/D converted by the voiceband ADC part of AD6535.The digitized speech (PCM 8KHz ,16KHz) is then passed to the DSP section of AD6527B for processing (coding, interleaving etc).

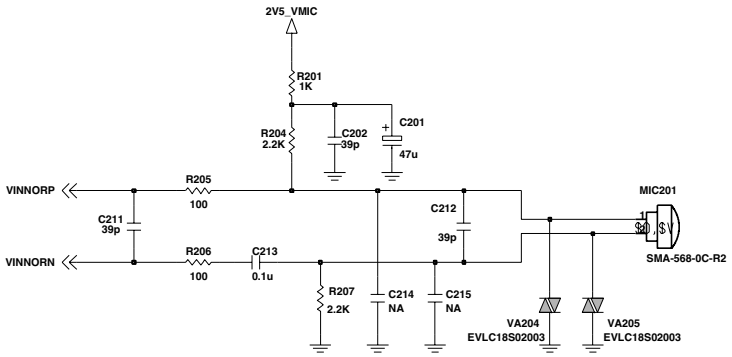
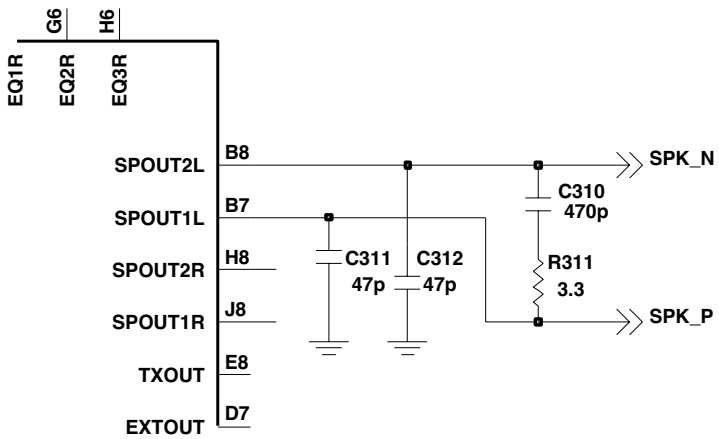


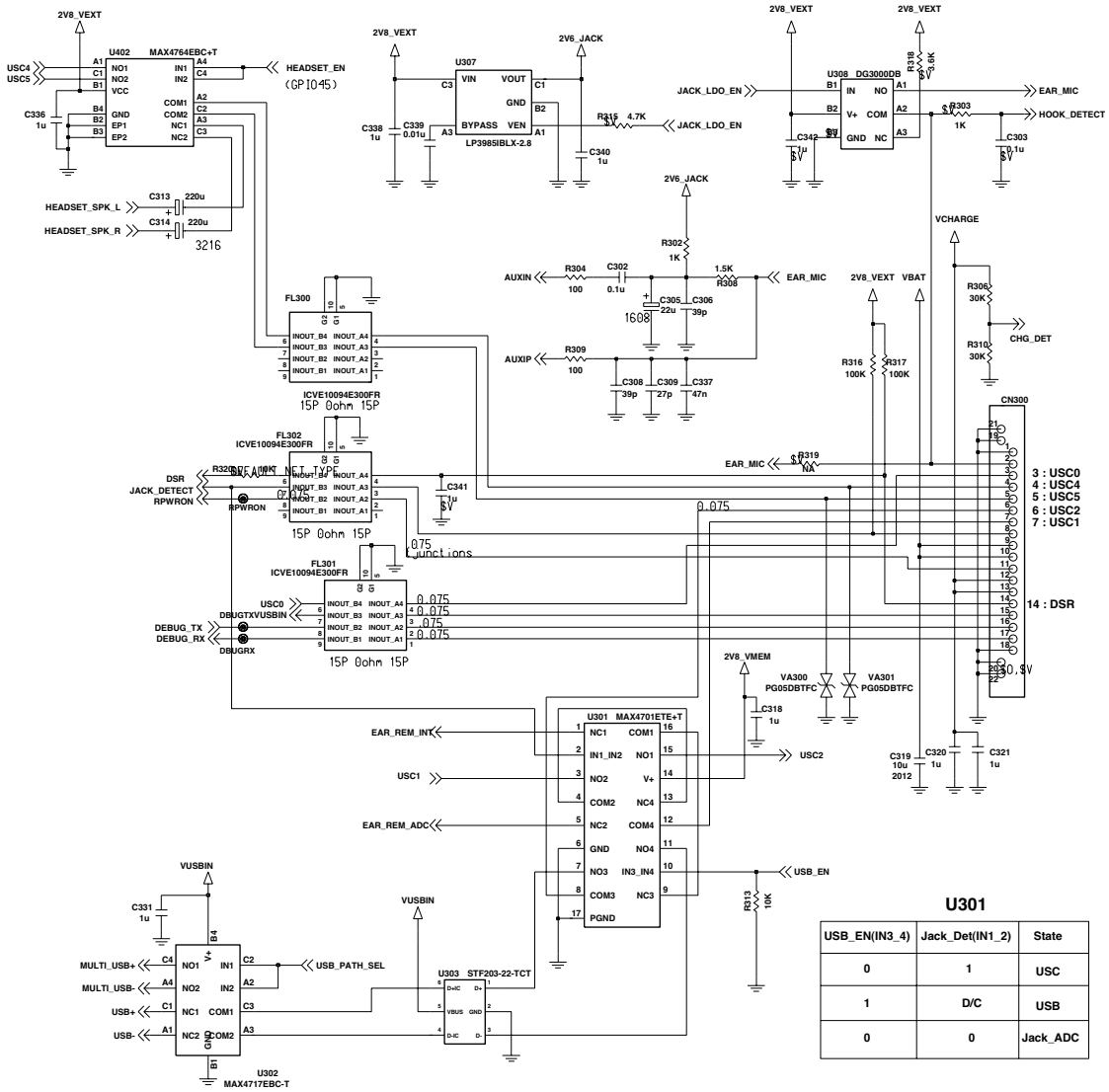
Figure 3-28. Connection between Microphone and AD6535

3.11 Main Speaker



3.12 IO Interface

LG-KG90 has only one I/O interface, 18pin MMI Connector, which is connected with Charger, Ear-Mic and USB cable.
U310 is Quad Analog Switch, it change signal paths depend on connecting what.



U301

USB_EN(IN3_4)	Jack_Det(IN1_2)	State
0	1	USC
1	D/C	USB
0	0	Jack_ADC

3.13 EL DRIVER IC (D381B, KEY PCB U202)

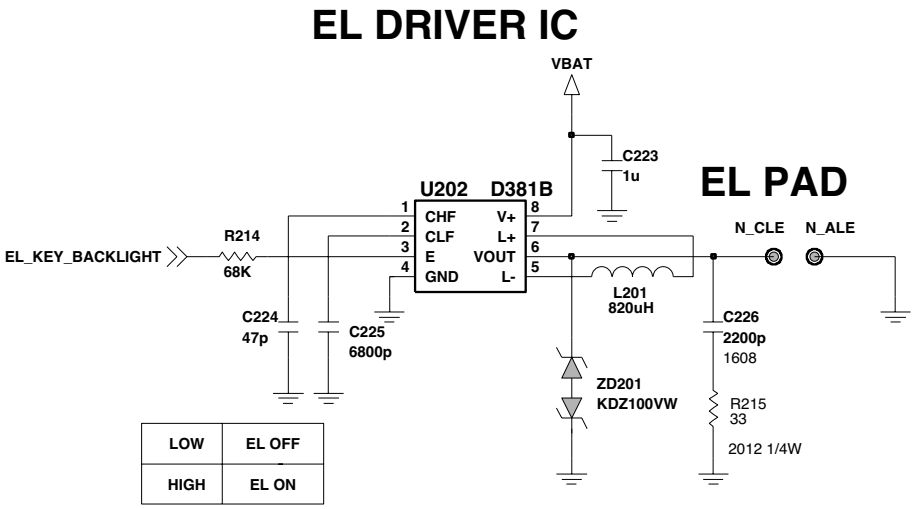


Figure 3-30. KEY BACK LIGHT, OLED

3.14 MEMORY(TOSHIBA, U203)

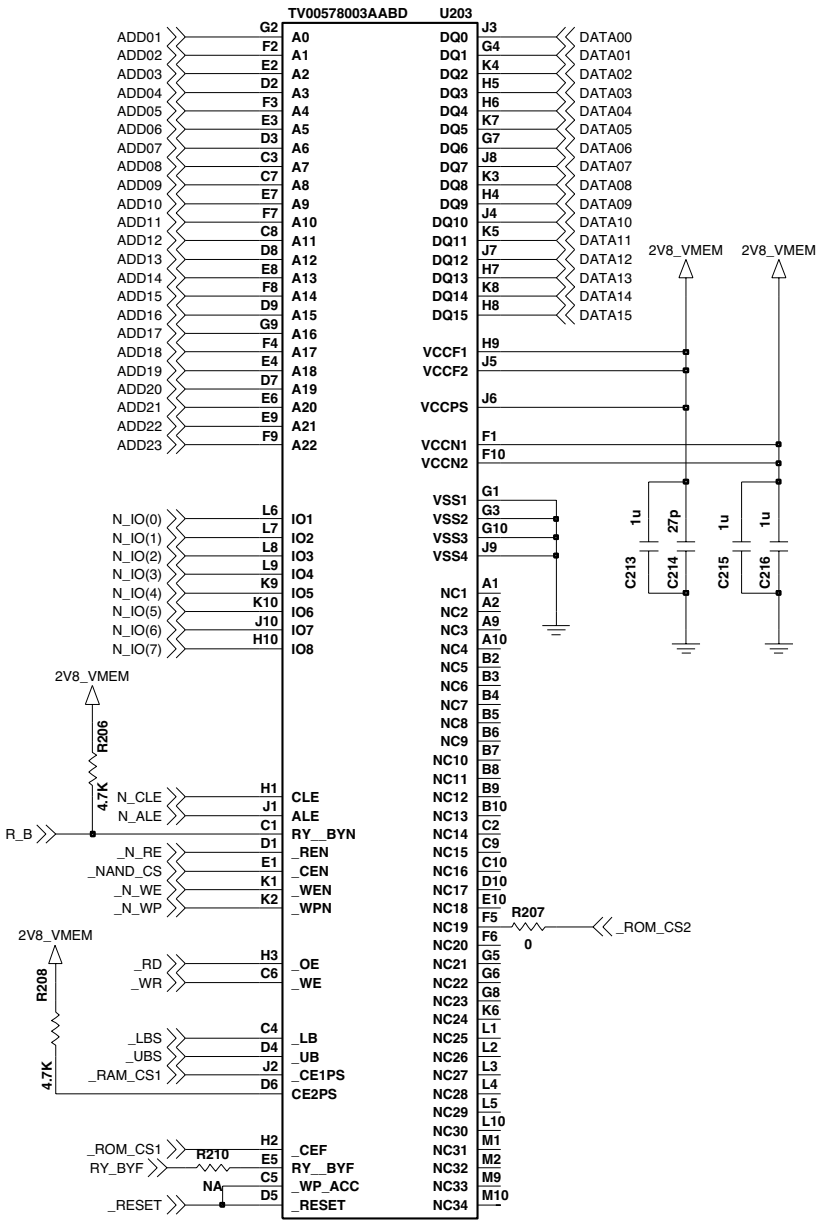


Figure 3-30. MEMORY

3.15 BLUETOOTH(LBMA-2C67B2, KEY PCB, M101)

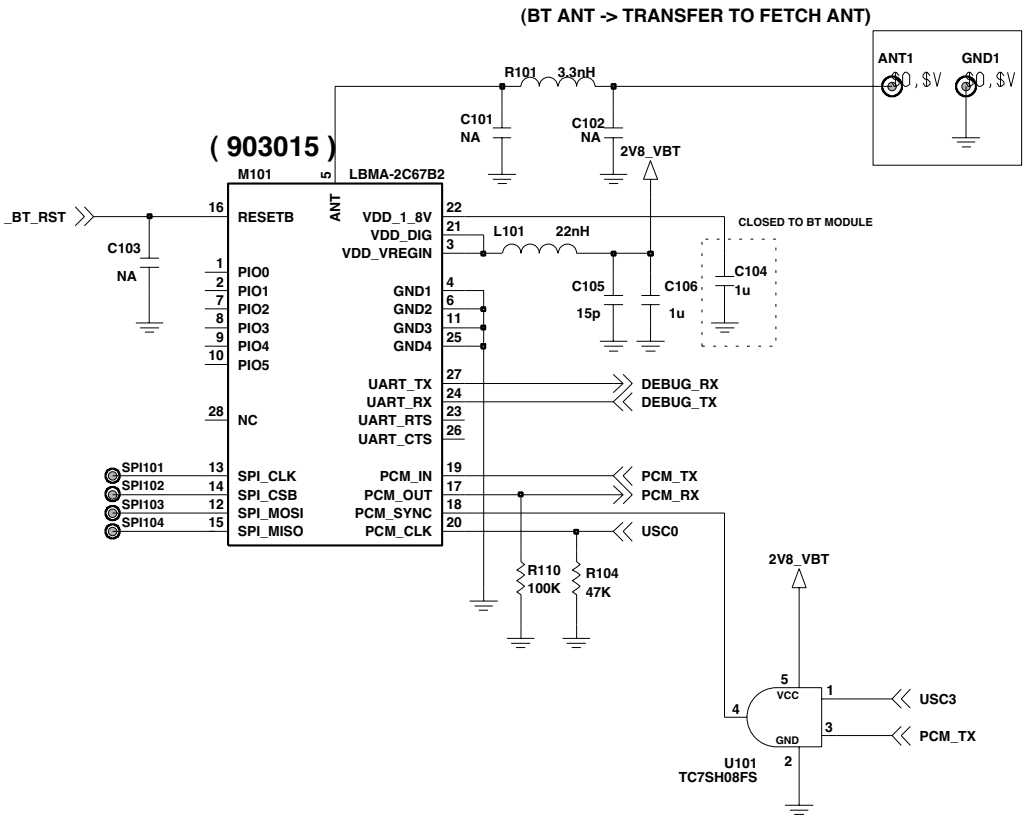


Figure 3-30. BT MODULE

3.16 LCD BACKLIGHT, FLASH LED CHARGE PUMP (AAT2807AIXN-4.5-T1, SLIDE PCB U100)

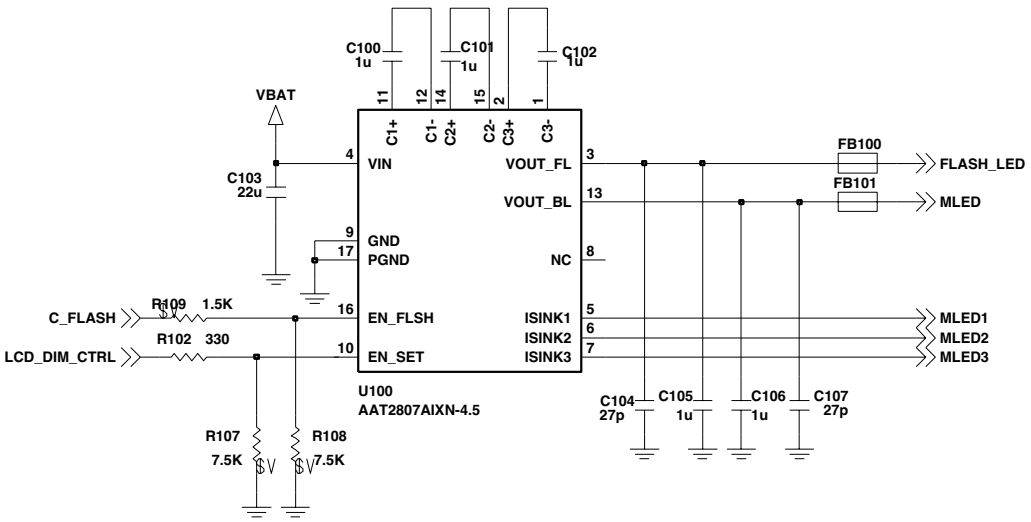
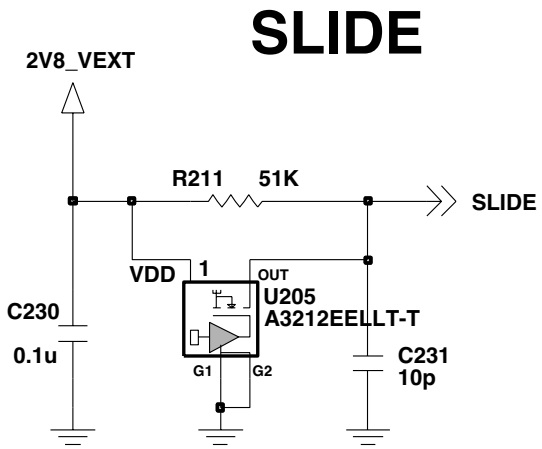


Figure 3-30. CHAGE PUMP

3.17 SLIDE SWITCH (U205)



3.18 VIBRATOR

The vibrator is placed in the Slide upper and contacted to SLIDE PCB. The vibrator is driven from VIBRATOR from AD6527B.

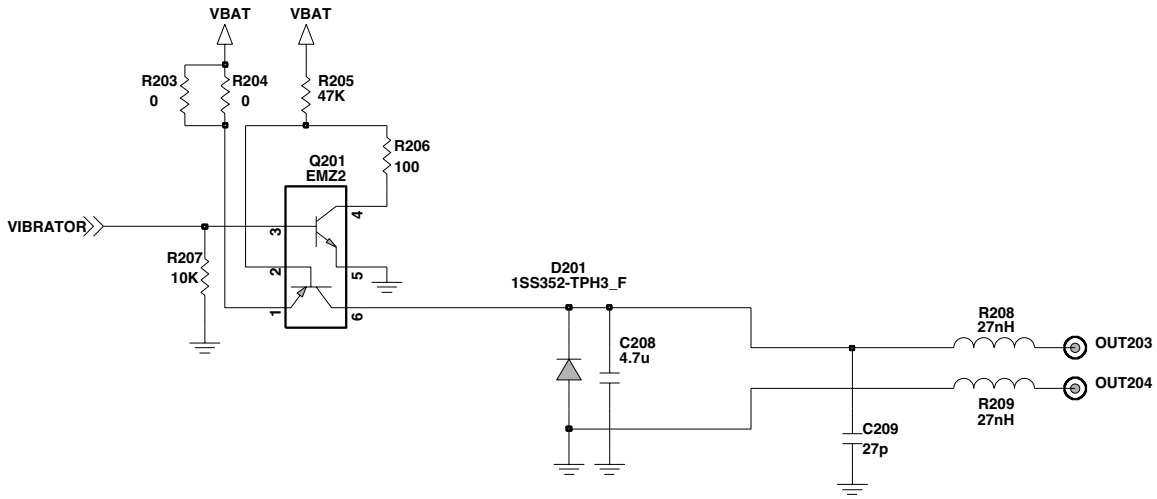


Figure 3-32. MOTOR

3.19 MULTIMEDIA MIC(OSF213,SLIDE PCB MIC100)

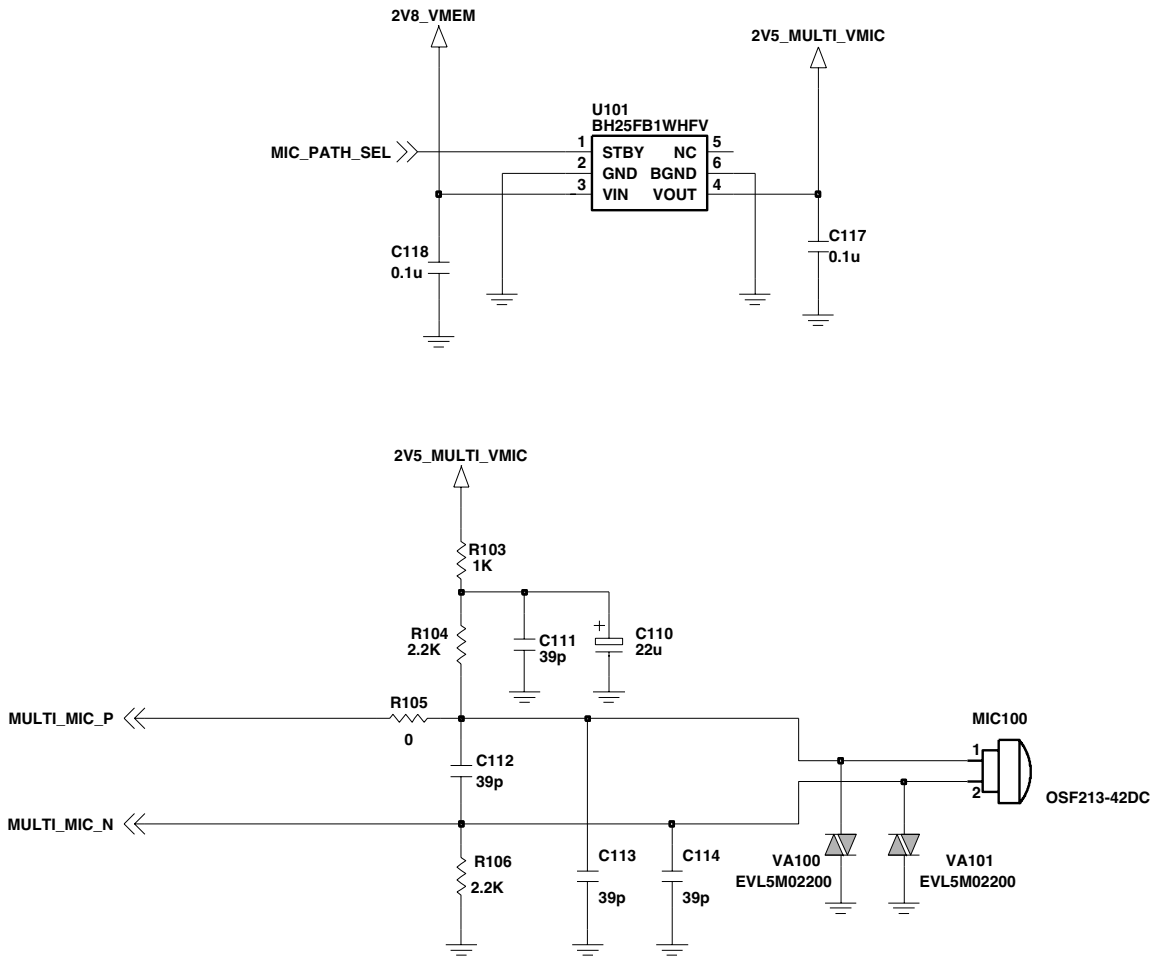


Figure 3-32. MULTIMEDIA MIC

4. TROUBLESHOOTING

4.1 RX Trouble

TEST POINT

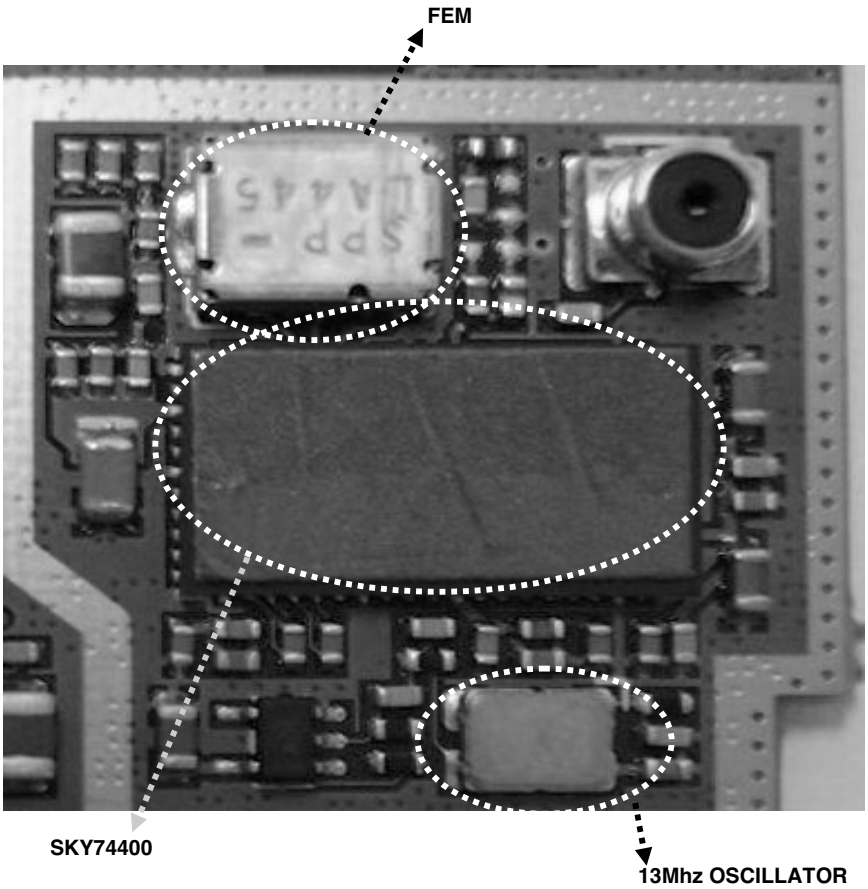
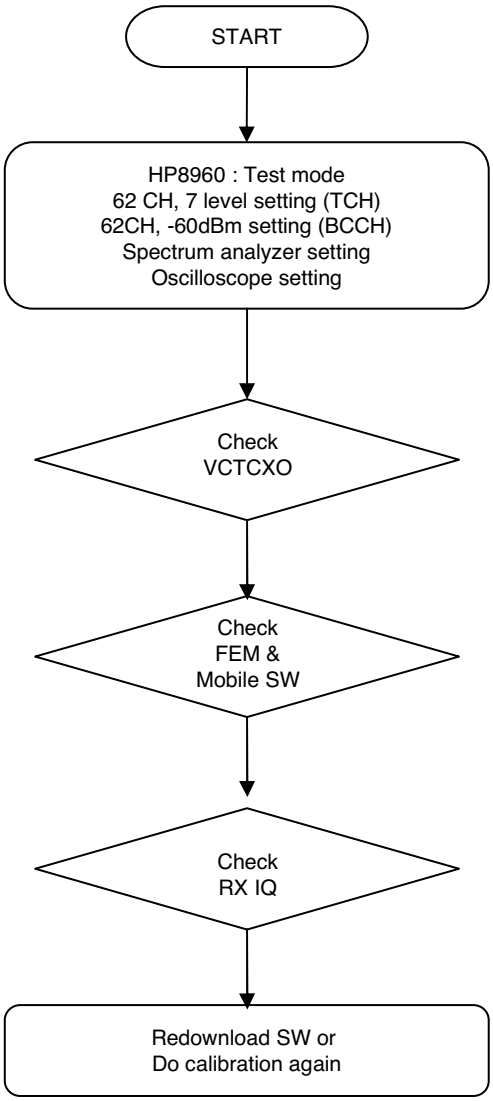


Figure 4-1(a)

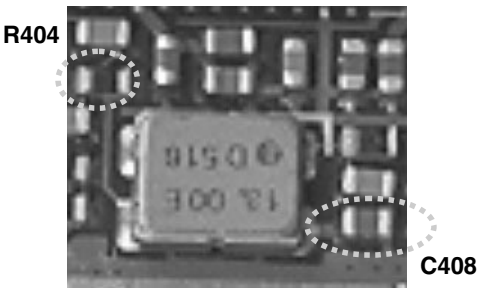
Checking Flow



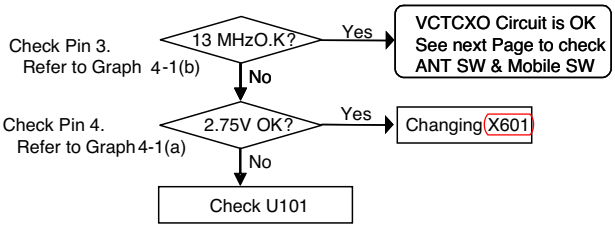
4. TROUBLESHOOTING

(1) Checking VCTCXO Circuit

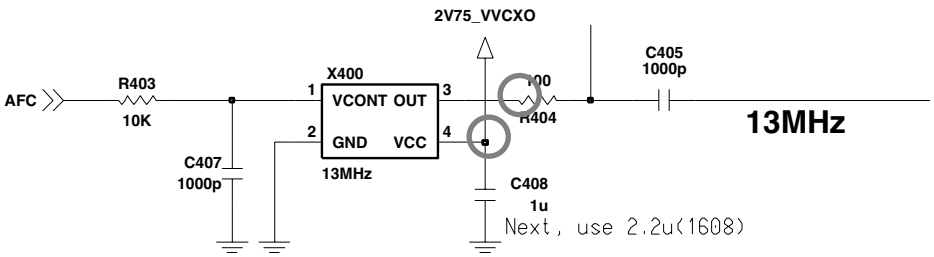
TEST POINT



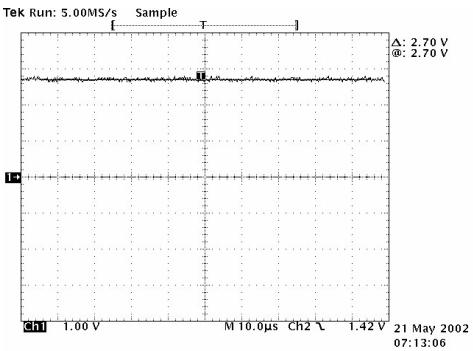
Checking Flow



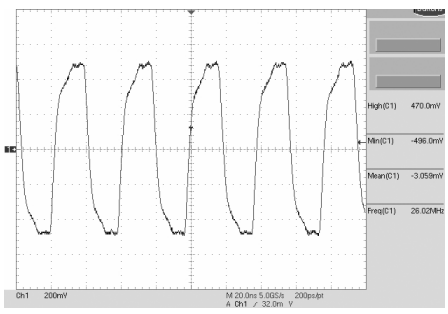
CIRCUIT



Waveform



Graph 4-1(a)



Graph 4-1(b)

(2) Checking FEM & Mobile SW

TEST POINT

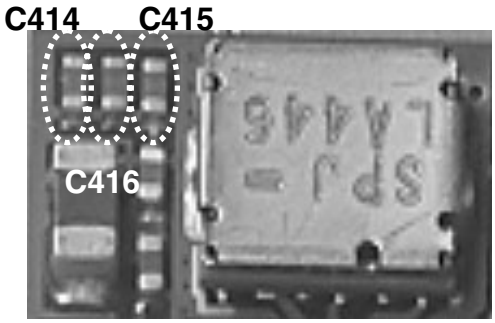
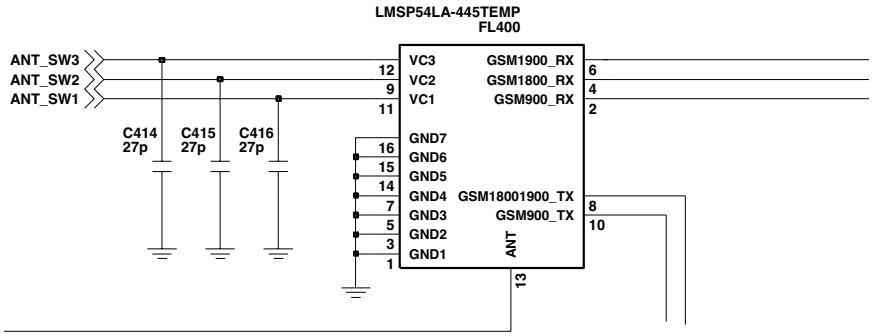
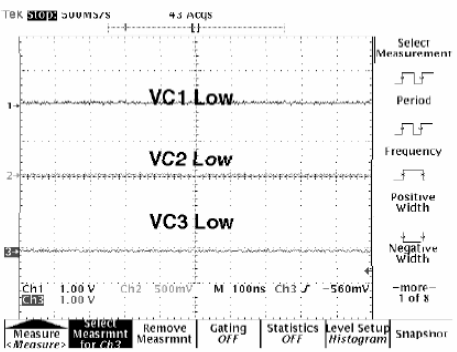


Figure 4-5

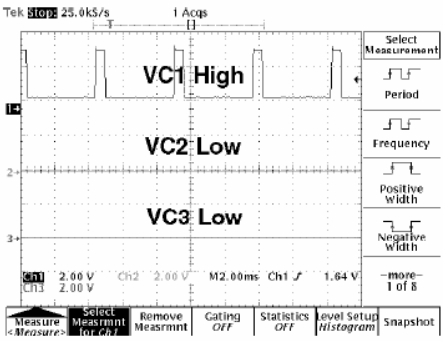
CIRCUIT



Waveform

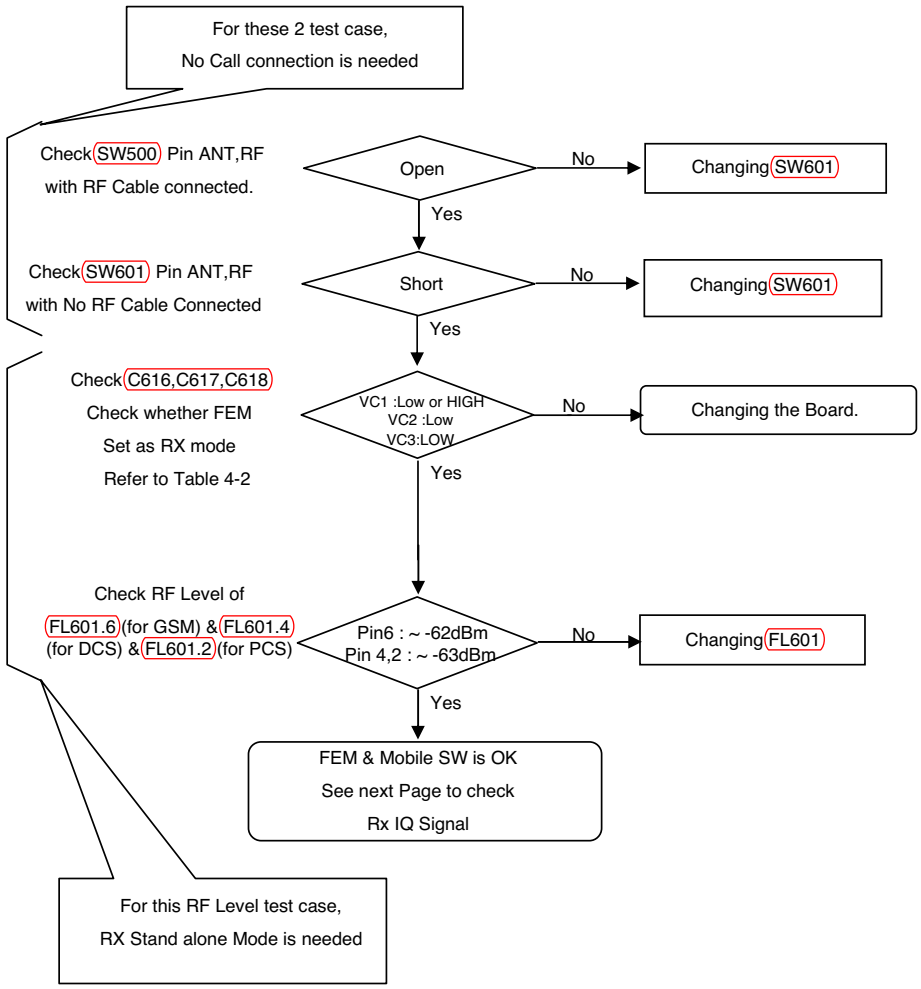


FEM Control GSM& DCS
Graph 4-3(a)



FEM Control PCS
Graph 4-3(b)

Checking Flow



	Vc1	Vc2	Vc3	Current
EGSM-Tx	0.0-0.1V	0.0-0.1V	2.3-3.0V	10mA Max
EGSM-Rx	0.0-0.1V	0.0-0.1V	0.0-0.1V	≈ 0mA
DCS/PCS-Tx	0.0-0.1V	2.3-3.0V	0.0-0.1V	10mA Max
DCS-Rx	0.0-0.1V	0.0-0.1V	0.0-0.1V	≈ 0mA
PCS-Rx	2.3-3.0V	0.0-0.1V	0.0-0.1V	10mA Max

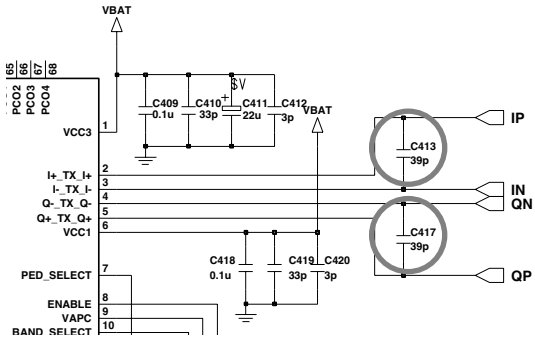
Table 4-2

(4) Checking RX IQ

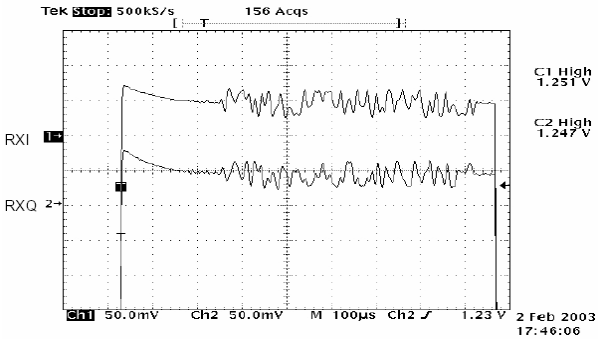
TEST POINT

C413 C417

CIRCUIT

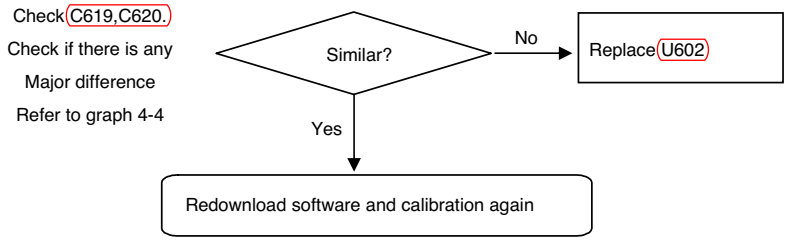


Waveform



Graph 4-4

Checking Flow



4.2 TX Trouble

TEST POINT

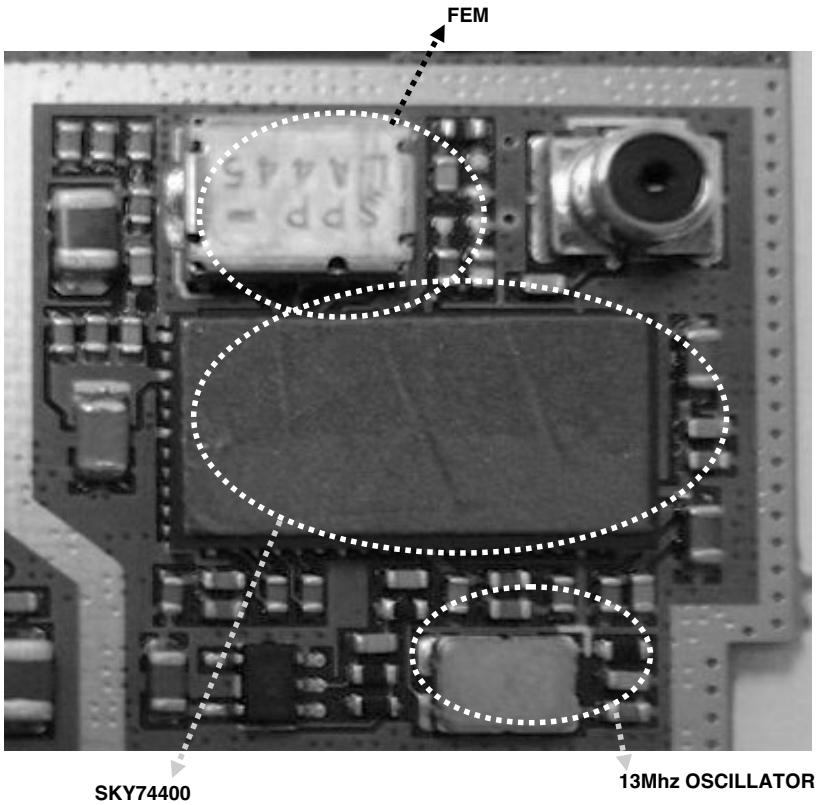
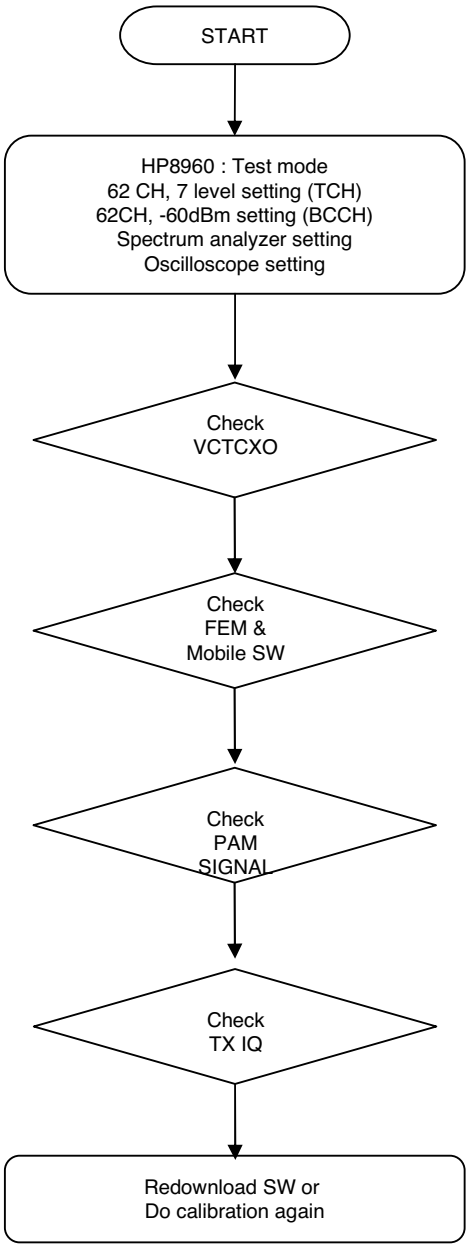


Figure 4-2

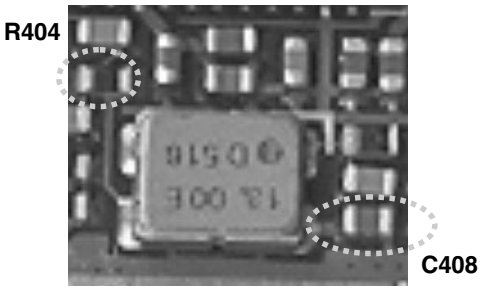
Checking Flow



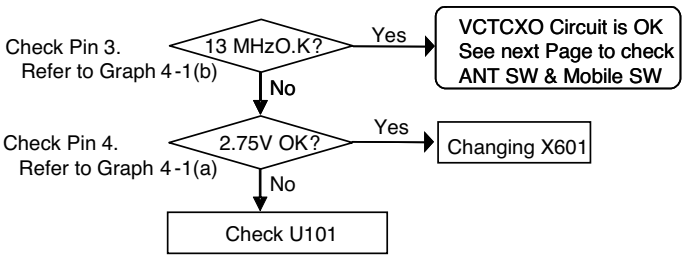
4. TROUBLESHOOTING

(1) Checking VCTCXO Circuit

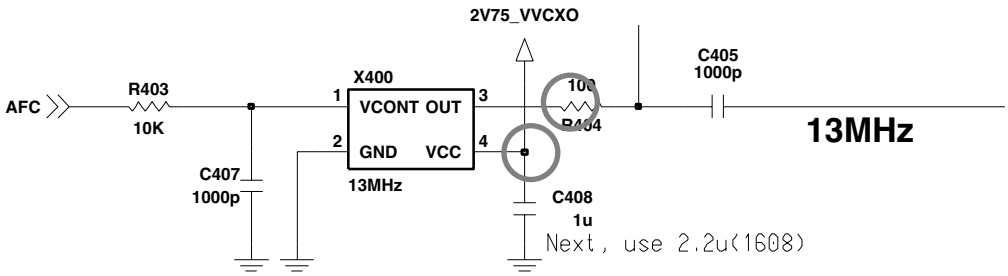
TEST POINT



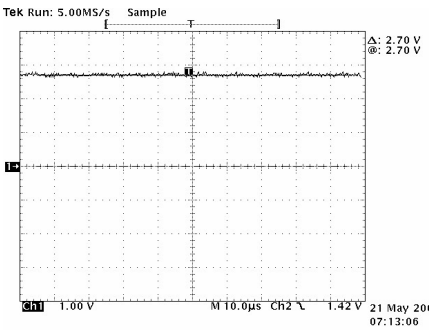
Checking Flow



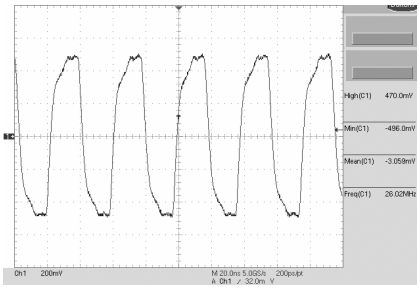
CIRCUIT



Waveform



Graph 4-1(a)



Graph 4-1(b)

(3) Checking Ant SW & Mobile SW

TEST POINT

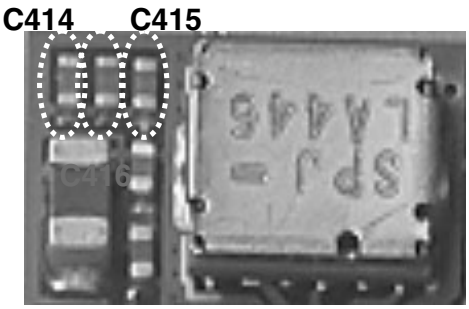
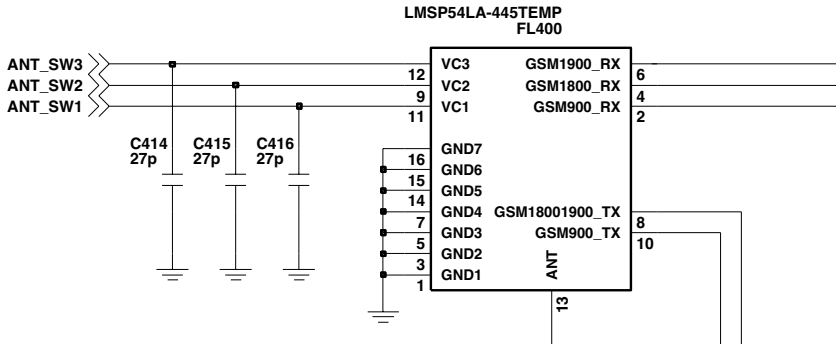
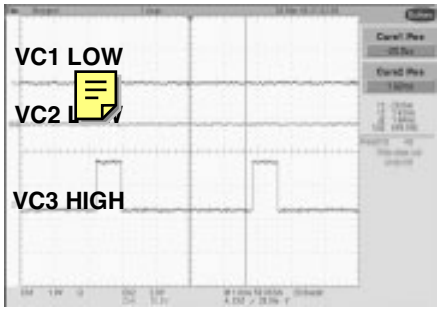


Figure 4-5

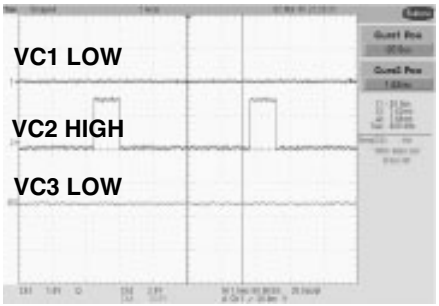
CIRCUIT



Waveform

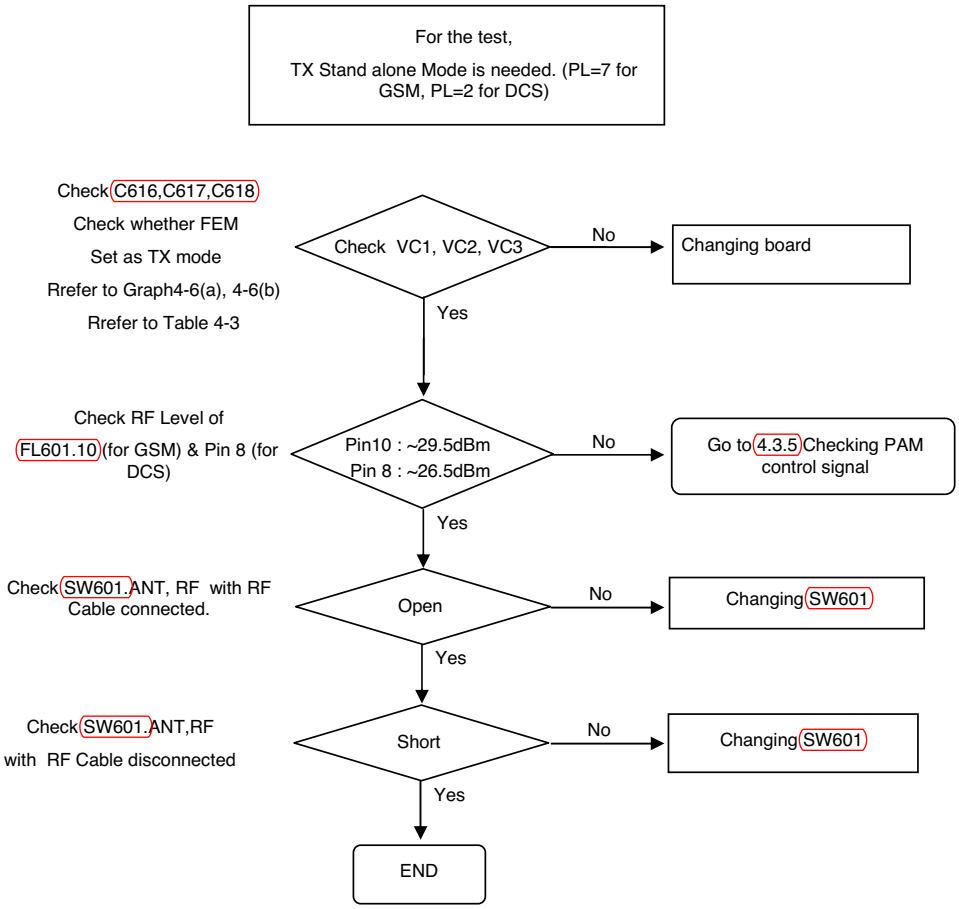


FEM Control EGSM
Graph 4-6(a)



FEM Control DCS & PCS
Graph 4-6(b)

Checking Flow

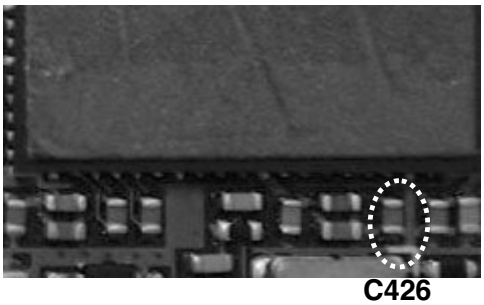


	Vc1	Vc2	Vc3	Current
EGSM-Tx	0.0-0.1V	0.0-0.1V	2.3-3.0V	10mA Max
EGSM-Rx	0.0-0.1V	0.0-0.1V	0.0-0.1V	≈ 0mA
DCS/PCS-Tx	0.0-0.1V	2.3-3.0V	0.0-0.1V	10mA Max
DCS-Rx	0.0-0.1V	0.0-0.1V	0.0-0.1V	≈ 0mA
PCS-Rx	2.3-3.0V	0.0-0.1V	0.0-0.1V	10mA Max

Table 4-3

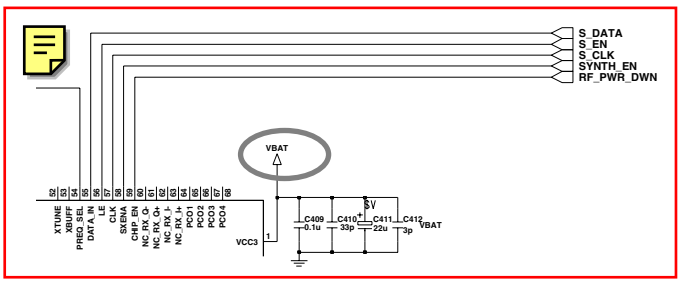
(4) Checking PAM Control Signal

TEST POINT

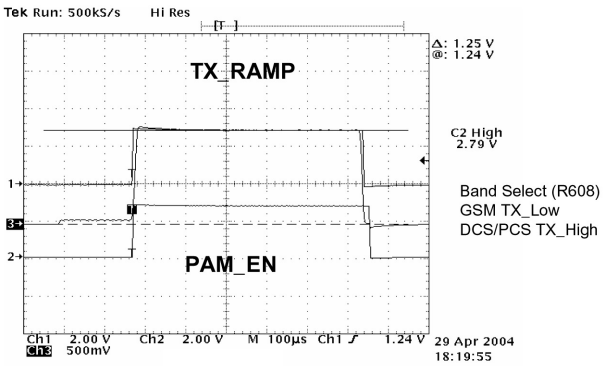


C426

CIRCUIT

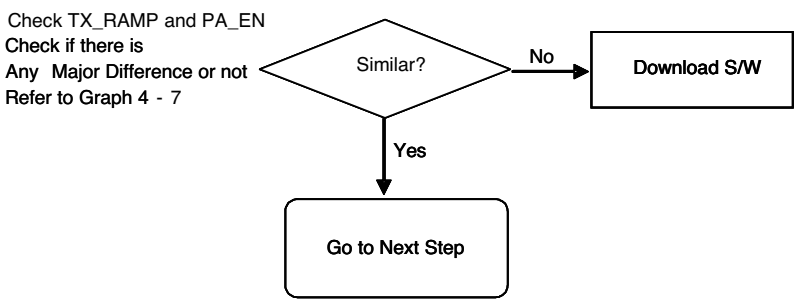


Waveform



Graph 4-7

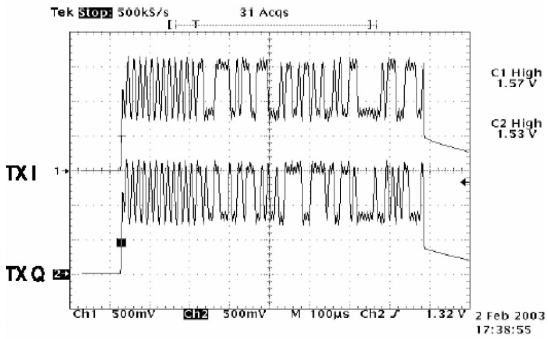
Checking Flow



(6) Checking TX IQ

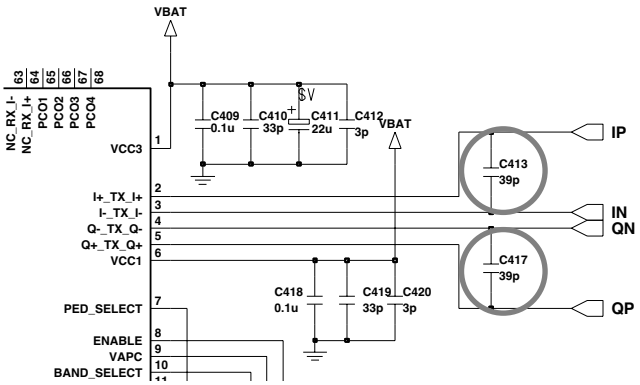
TEST POINT

Waveform

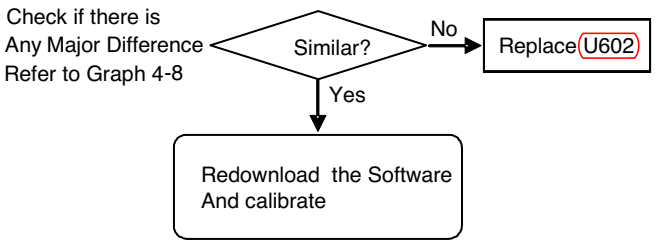


Graph 4-8

CIRCUIT

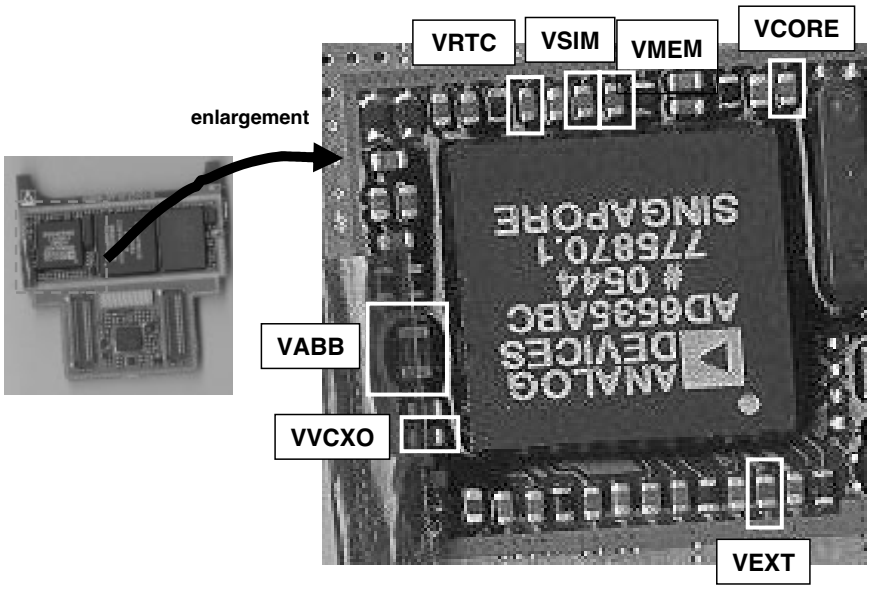


Checking Flow



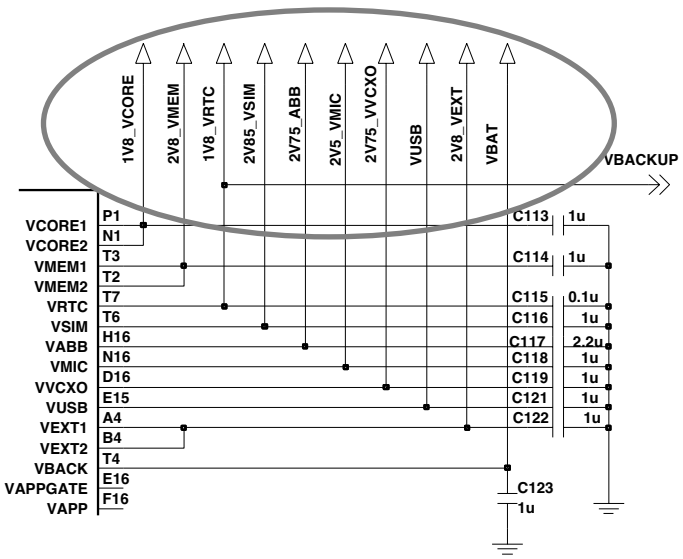
4.3 Power On Trouble

TEST POINT



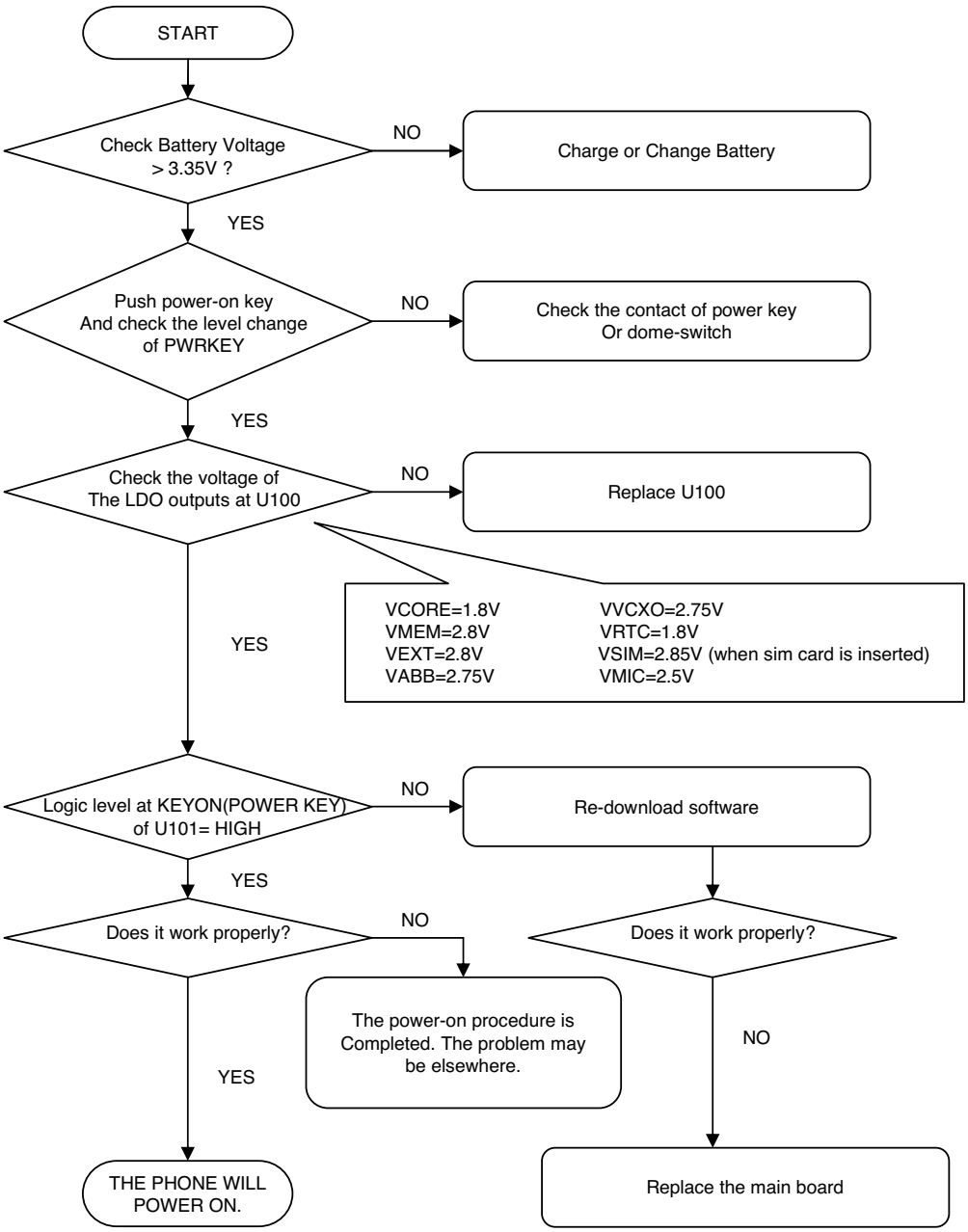
CIRCUIT

U100
ABB
AD6535



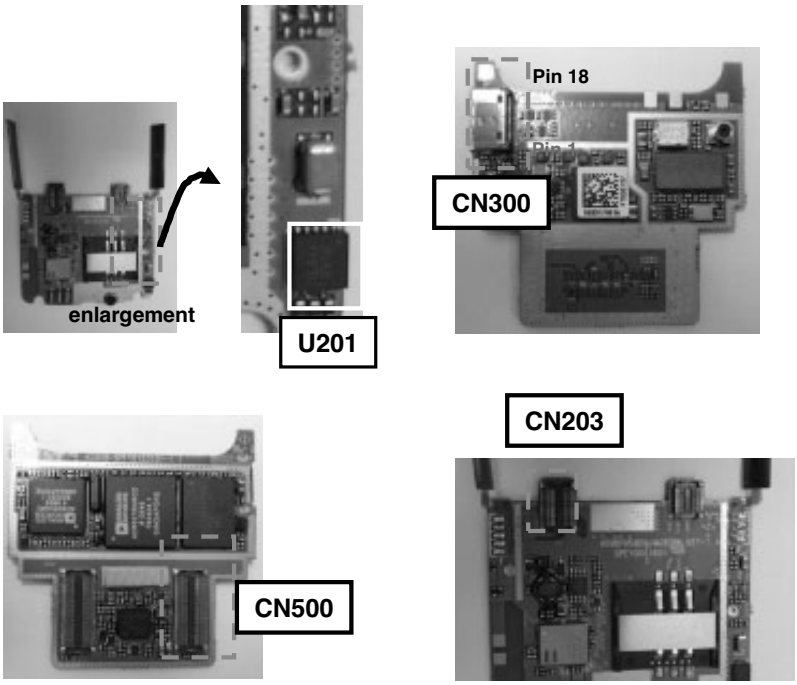
4. TROUBLESHOOTING

Checking Flow



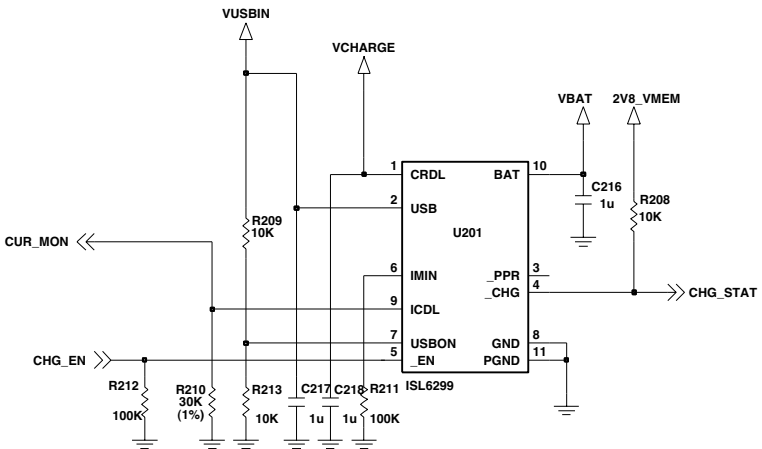
4.4 Charging Trouble

TEST POINT



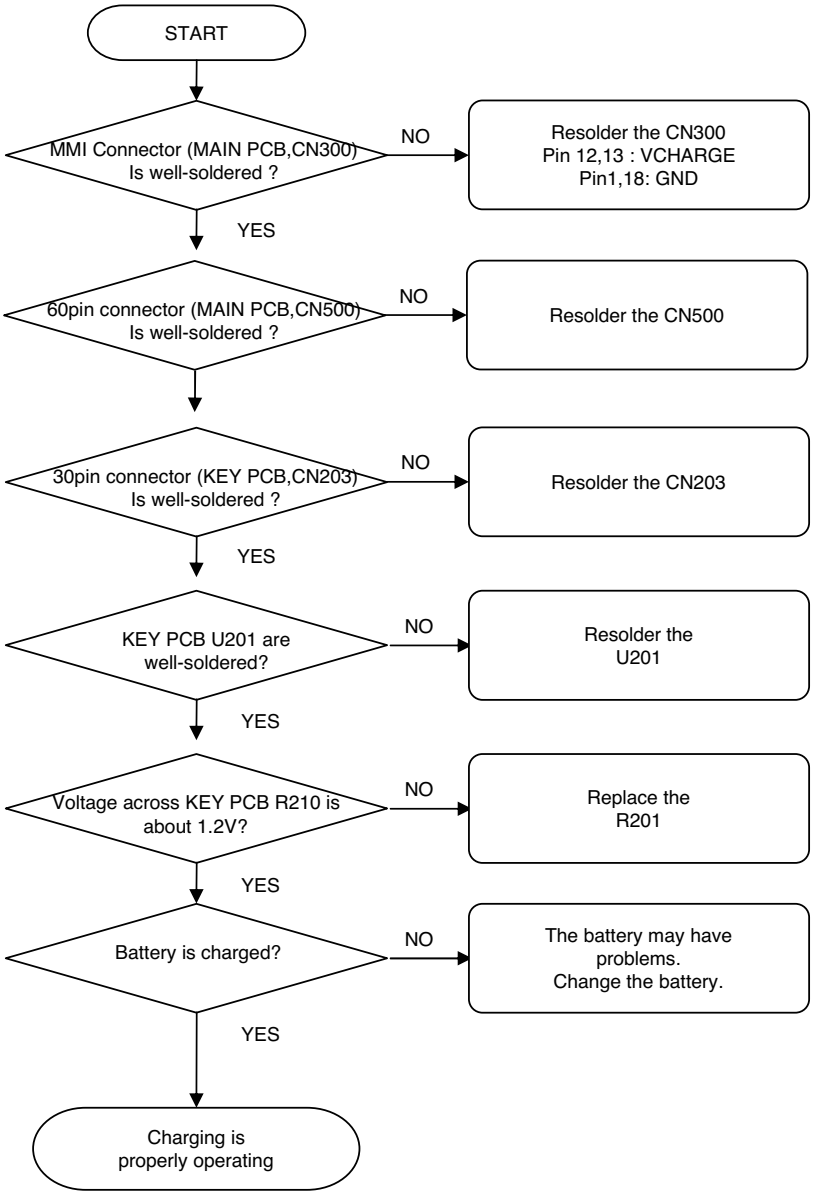
CIRCUIT

CHARGING IC



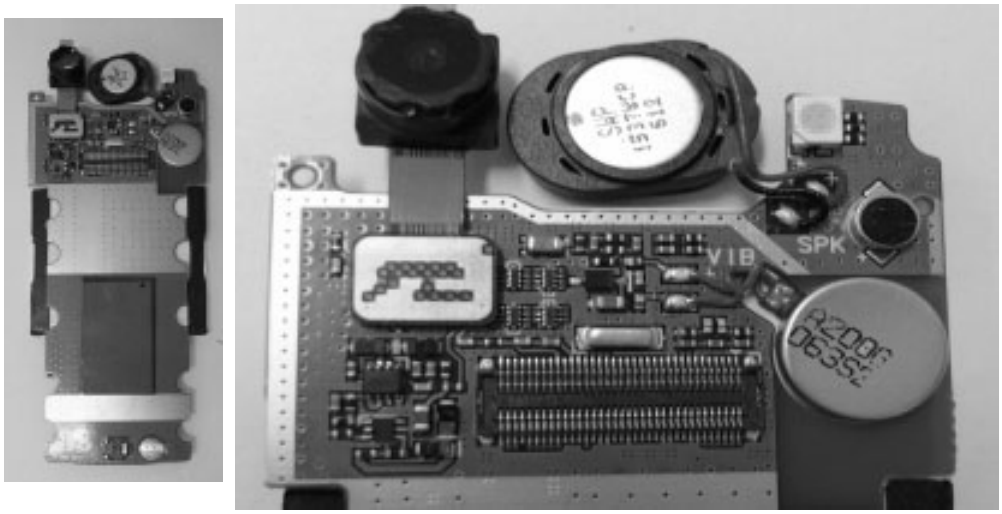
4. TROUBLESHOOTING

Checking Flow

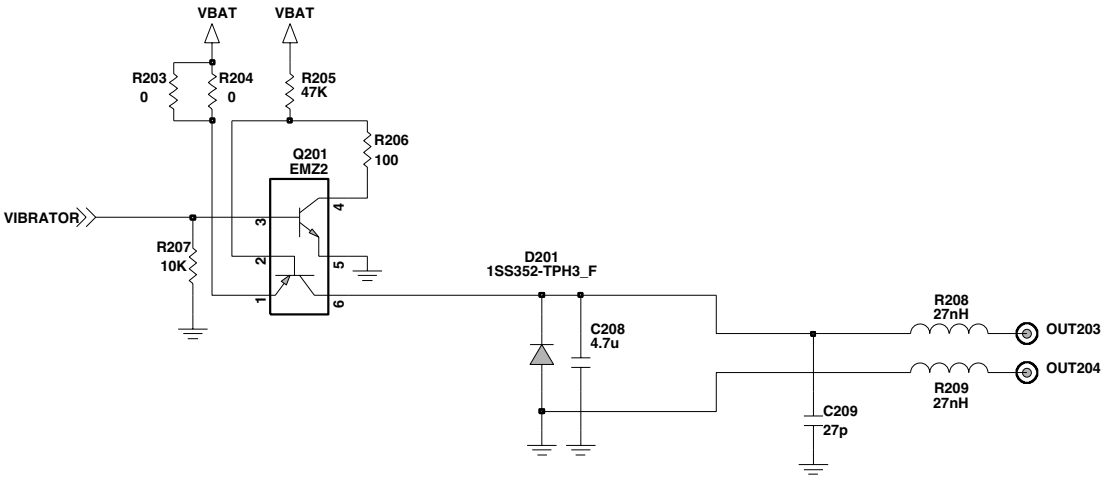


4.5 Vibrator Trouble

TEST POINT

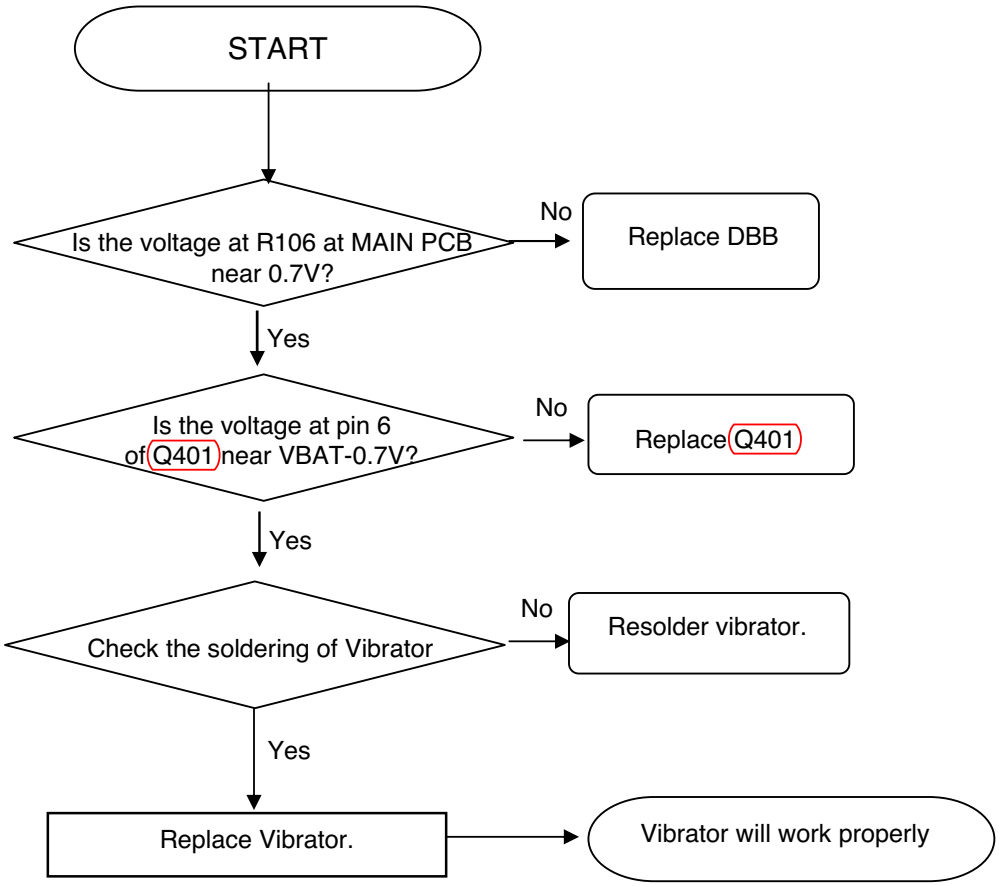


CIRCUIT



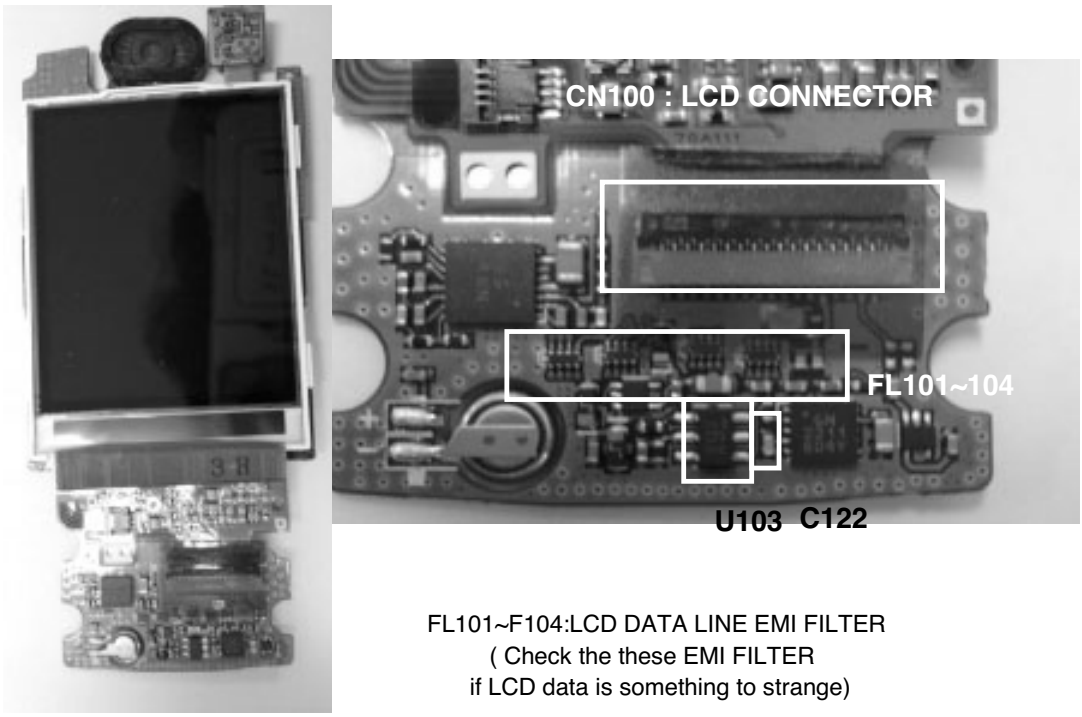
Checking Flow

SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu



4.6 LCD Trouble

TEST POINT

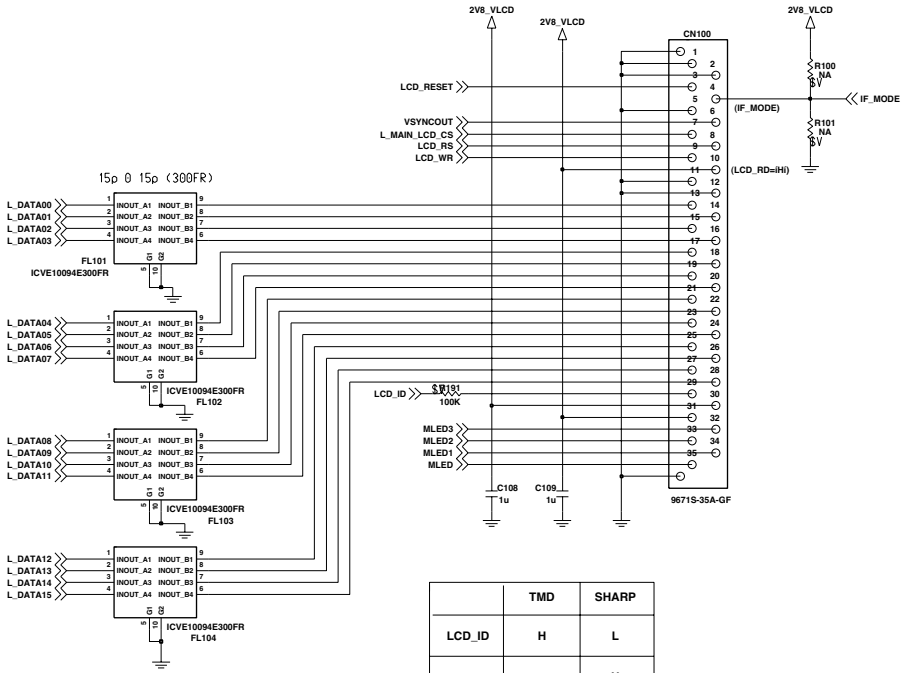


FL101~F104:LCD DATA LINE EMI FILTER
(Check the these EMI FILTER
if LCD data is something to strange)

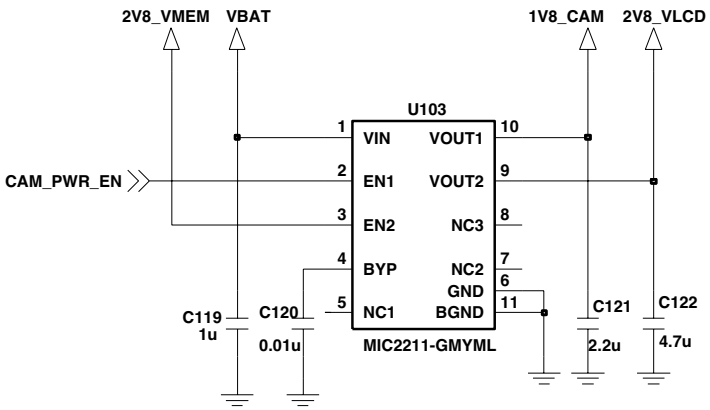
4. TROUBLESHOOTING

CIRCUIT DIAGRAM

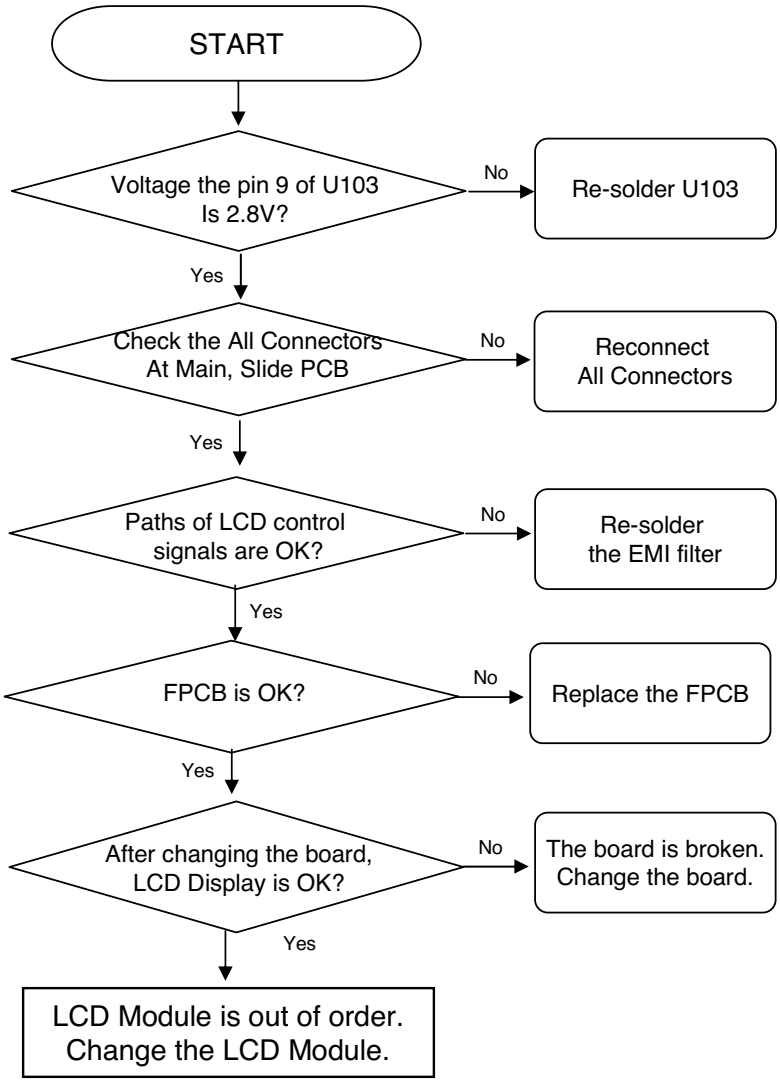
- IF CONNECTOR



	TMD	SHARP
LCD_ID	H	L
IF_MODE	L	H

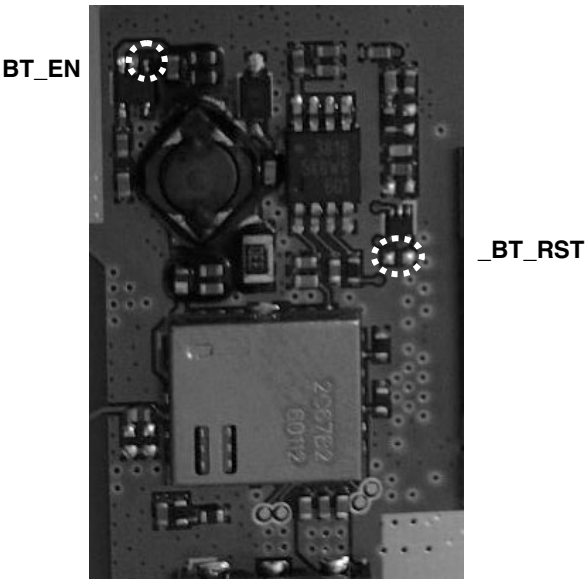


Checking Flow



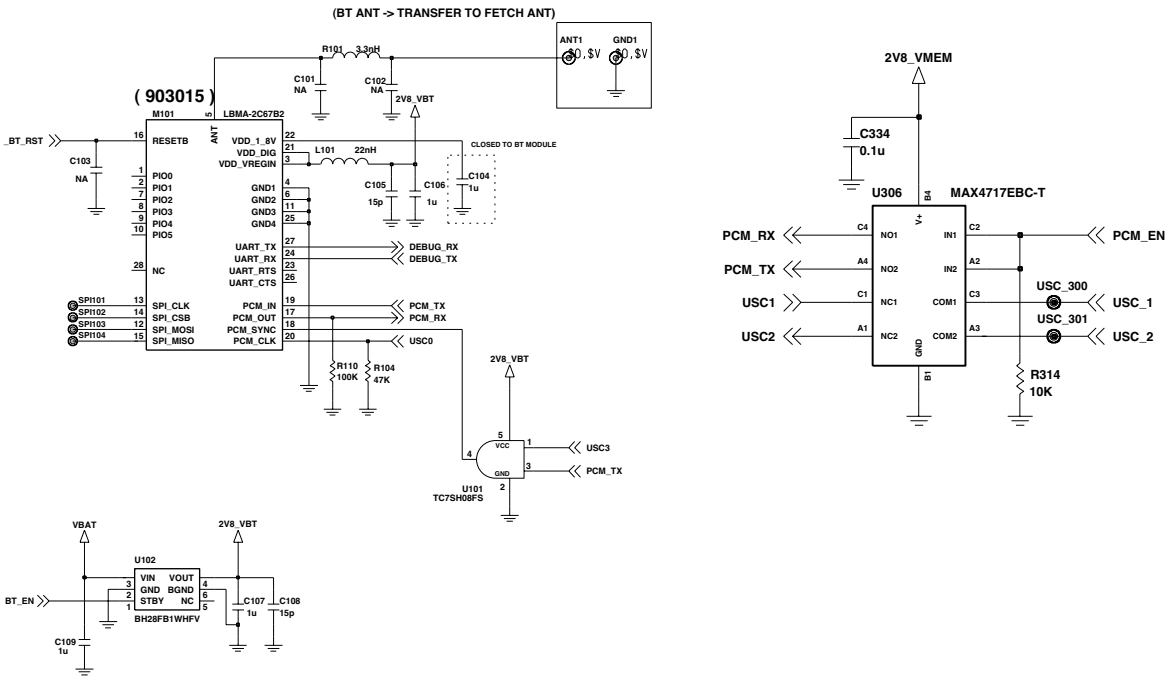
4.7 BT Trouble

TEST POINT

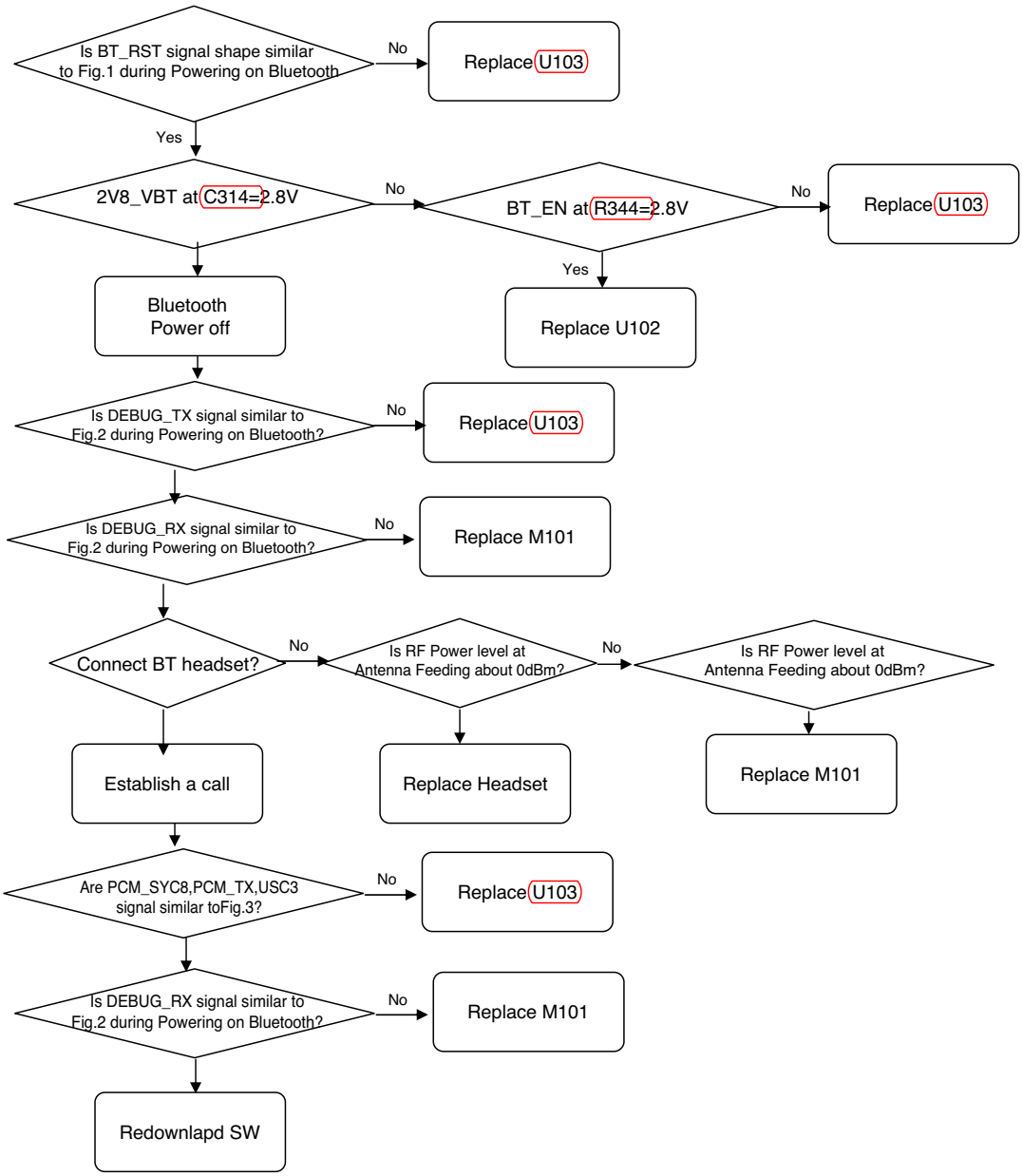


CIRCUIT DIAGRAM

BLUETOOTH



Checking Flow



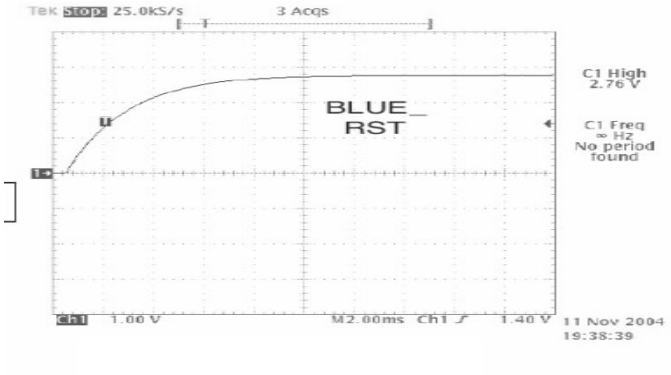


Figure 1_Blue-RST

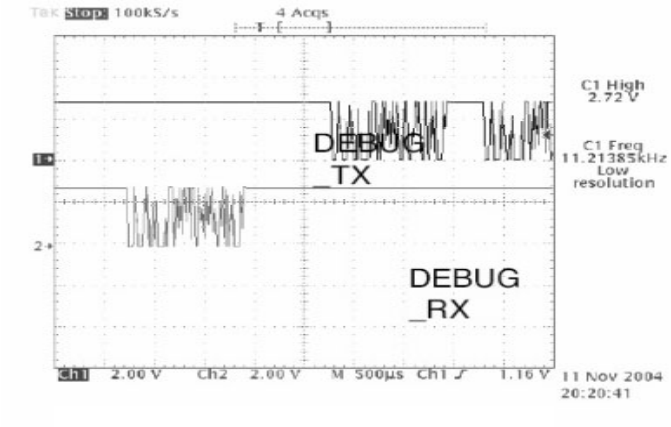


Figure 2_DEBUG_TX, RX

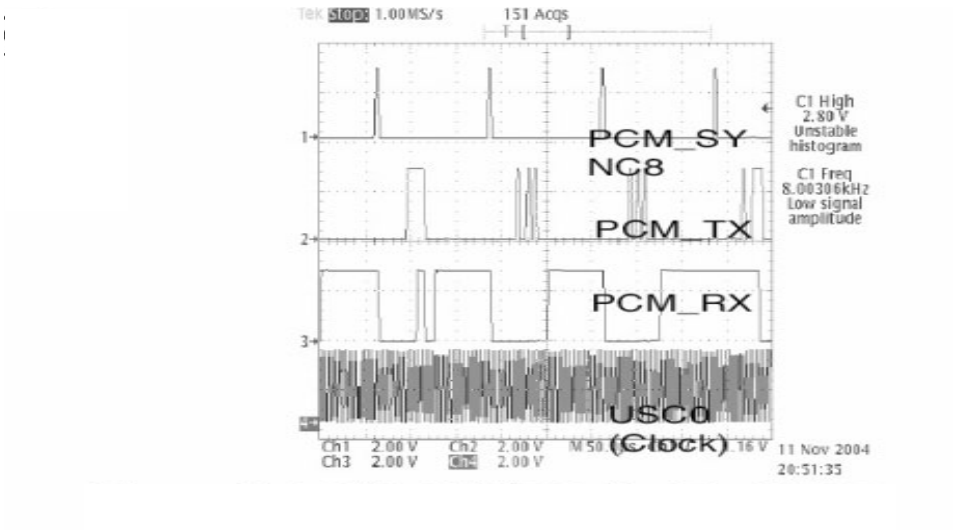
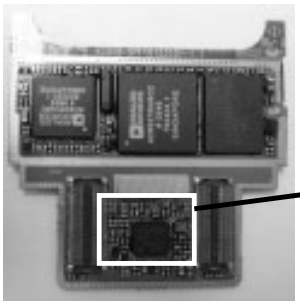
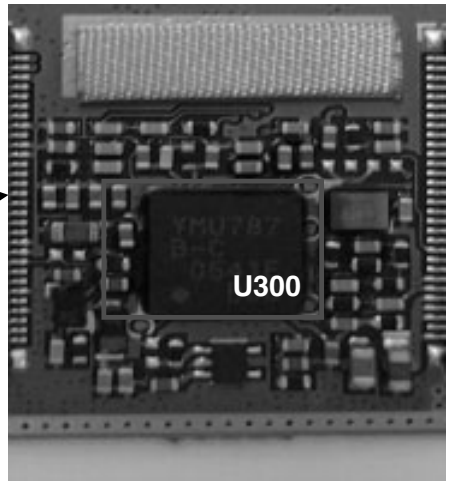


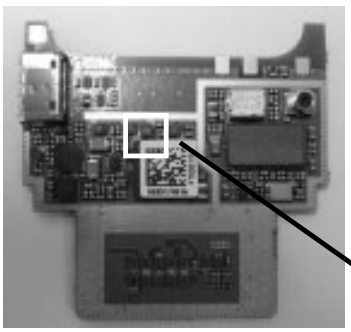
Figure 3_PCM_SYNCS, TX, RX, USC0

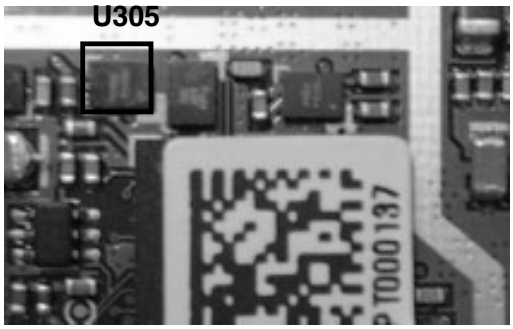
4.8 Speaker Trouble

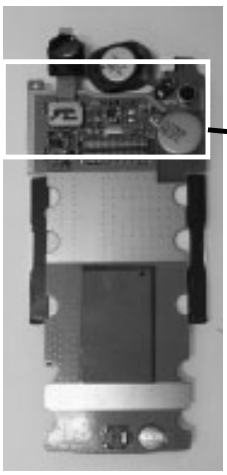
TEST POINT

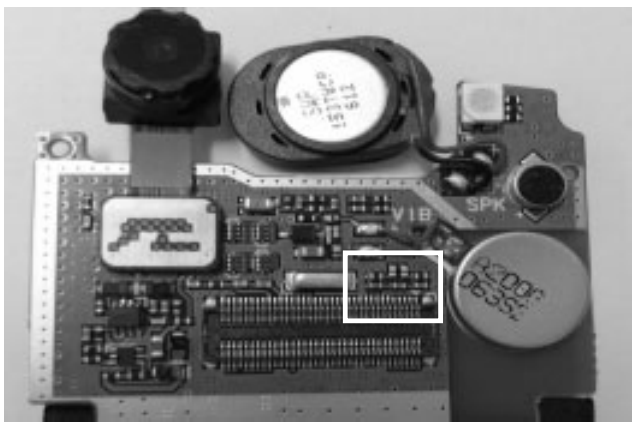




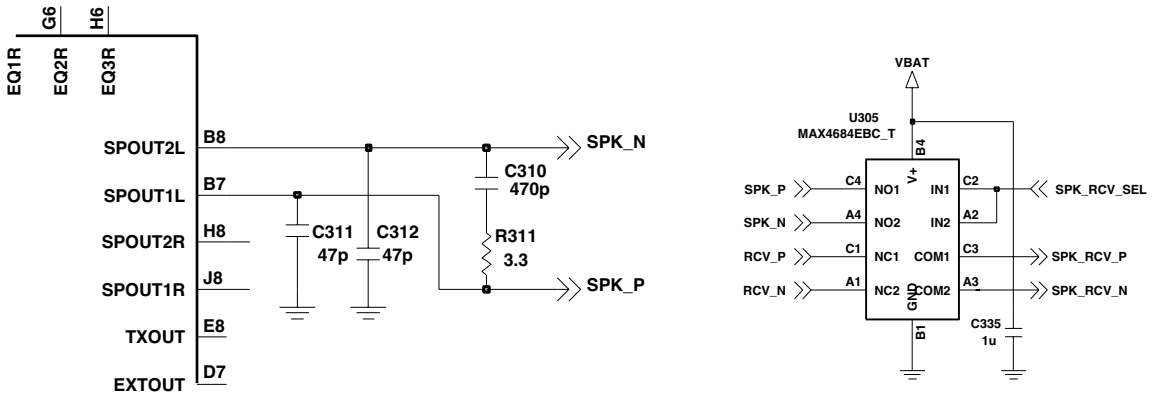




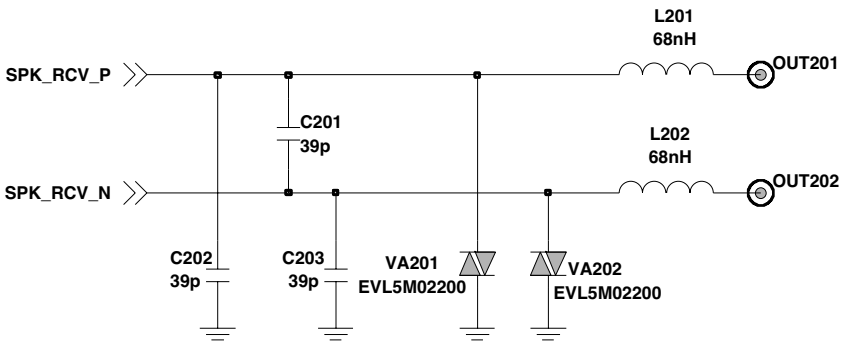




CIRCUIT DIAGRAM

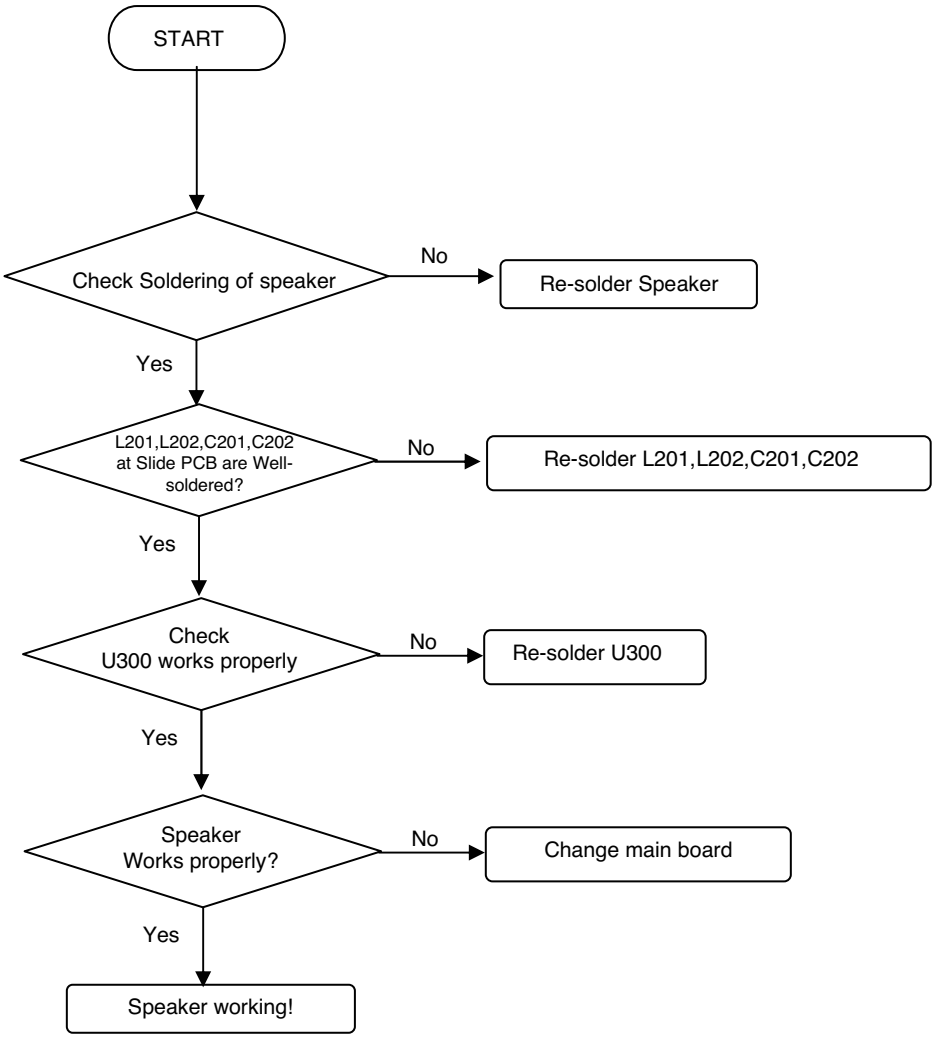


MAIN PCB



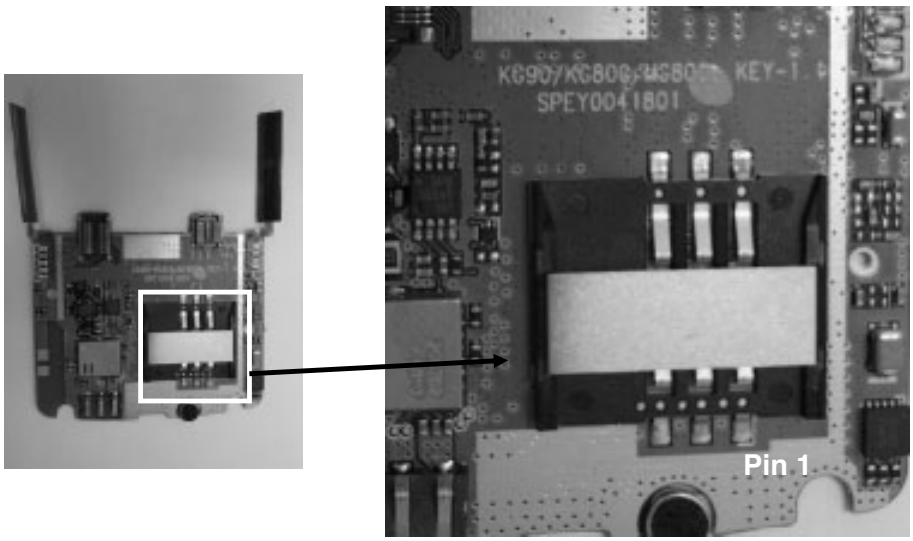
SLIDE PCB

Checking Flow

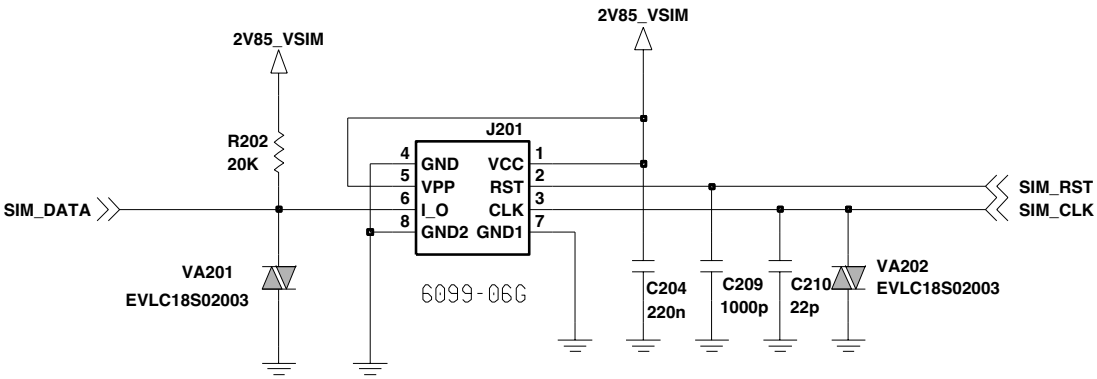


4.9 SIM Card Interface Trouble

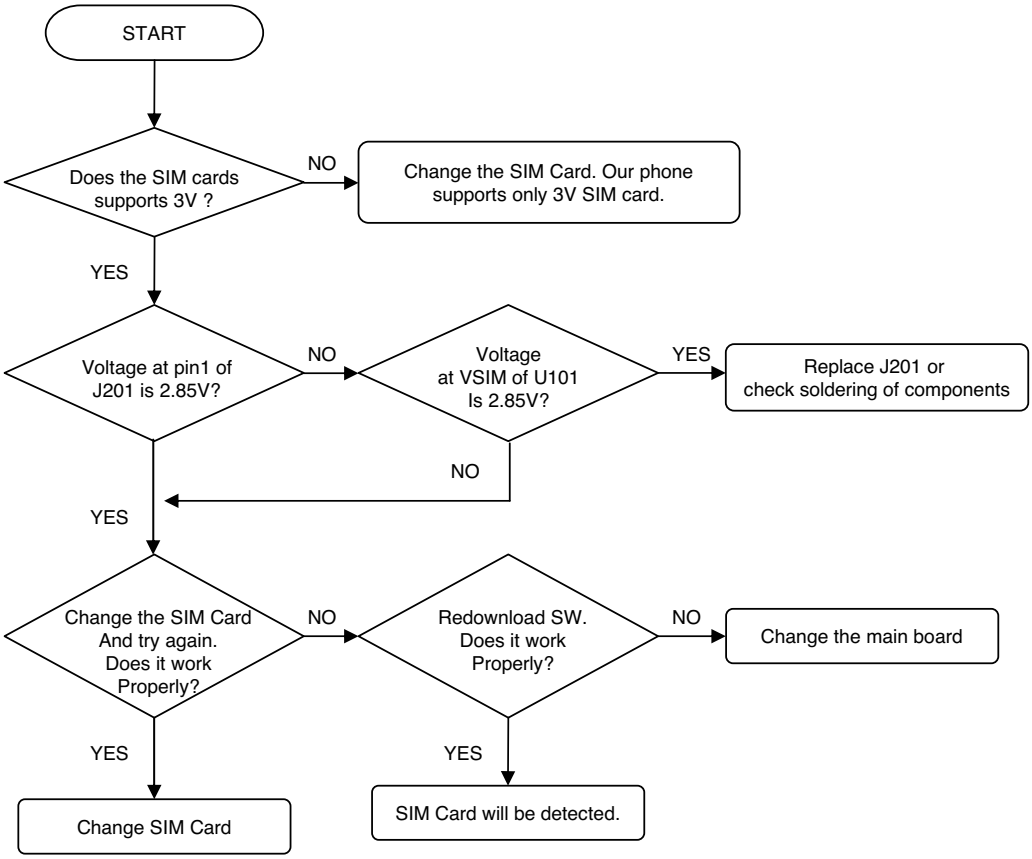
TEST POINT



CIRCUIT DIAGRAM

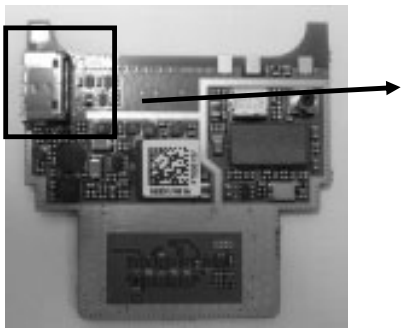


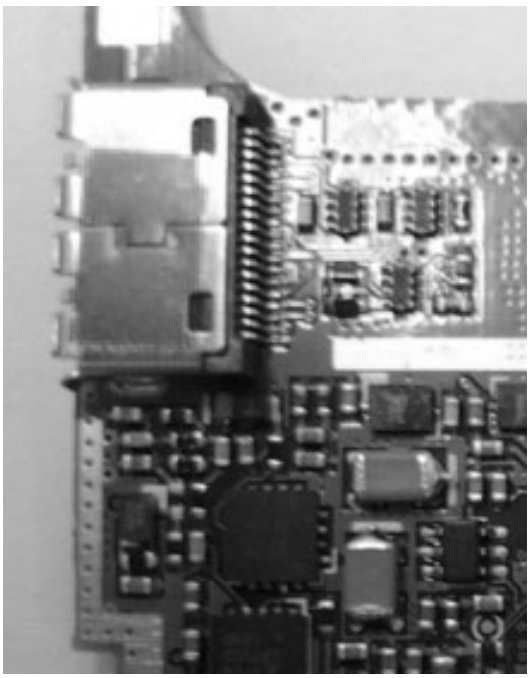
Checking Flow



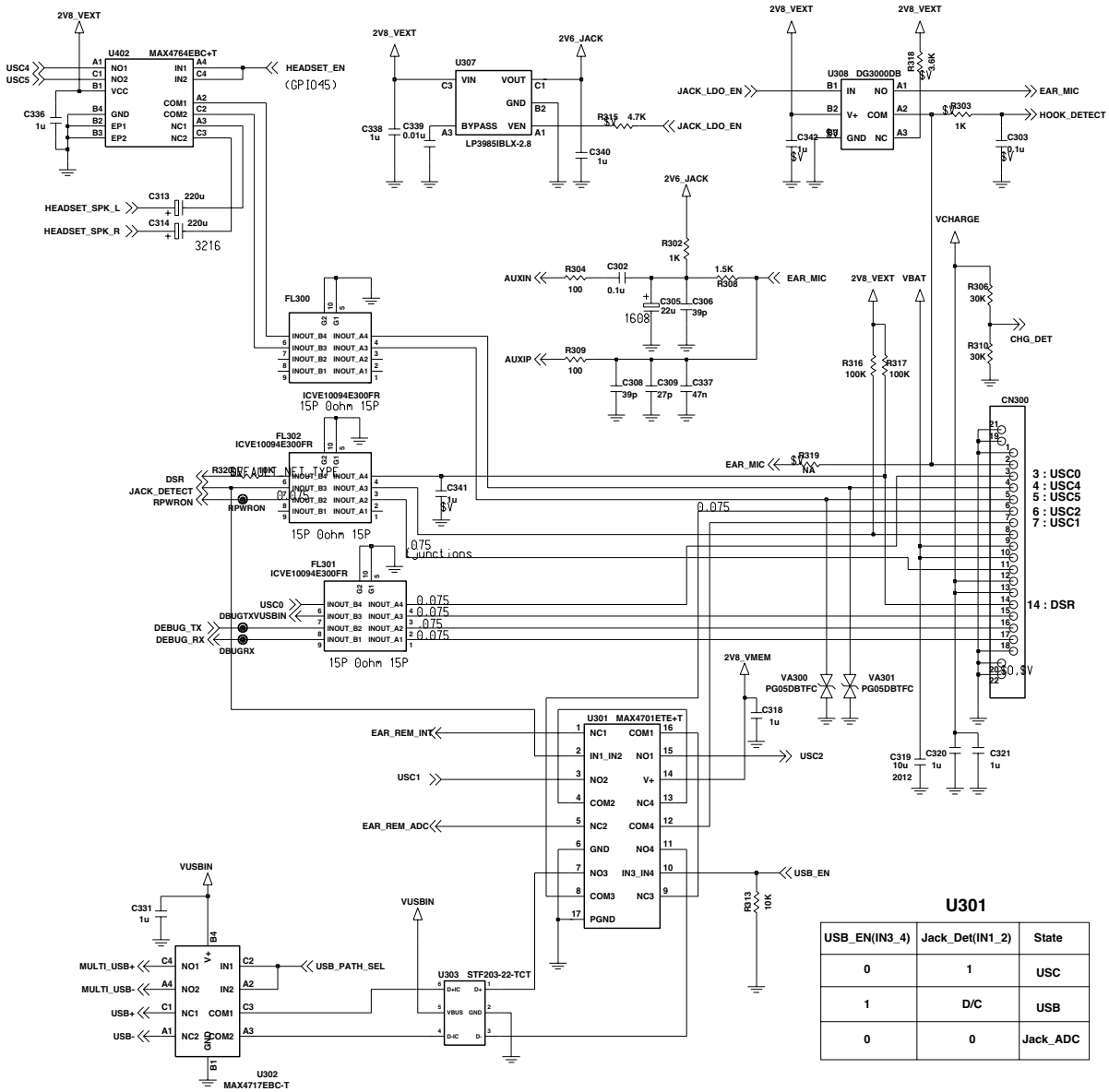
4.10 Earphone Trouble

TEST POINT





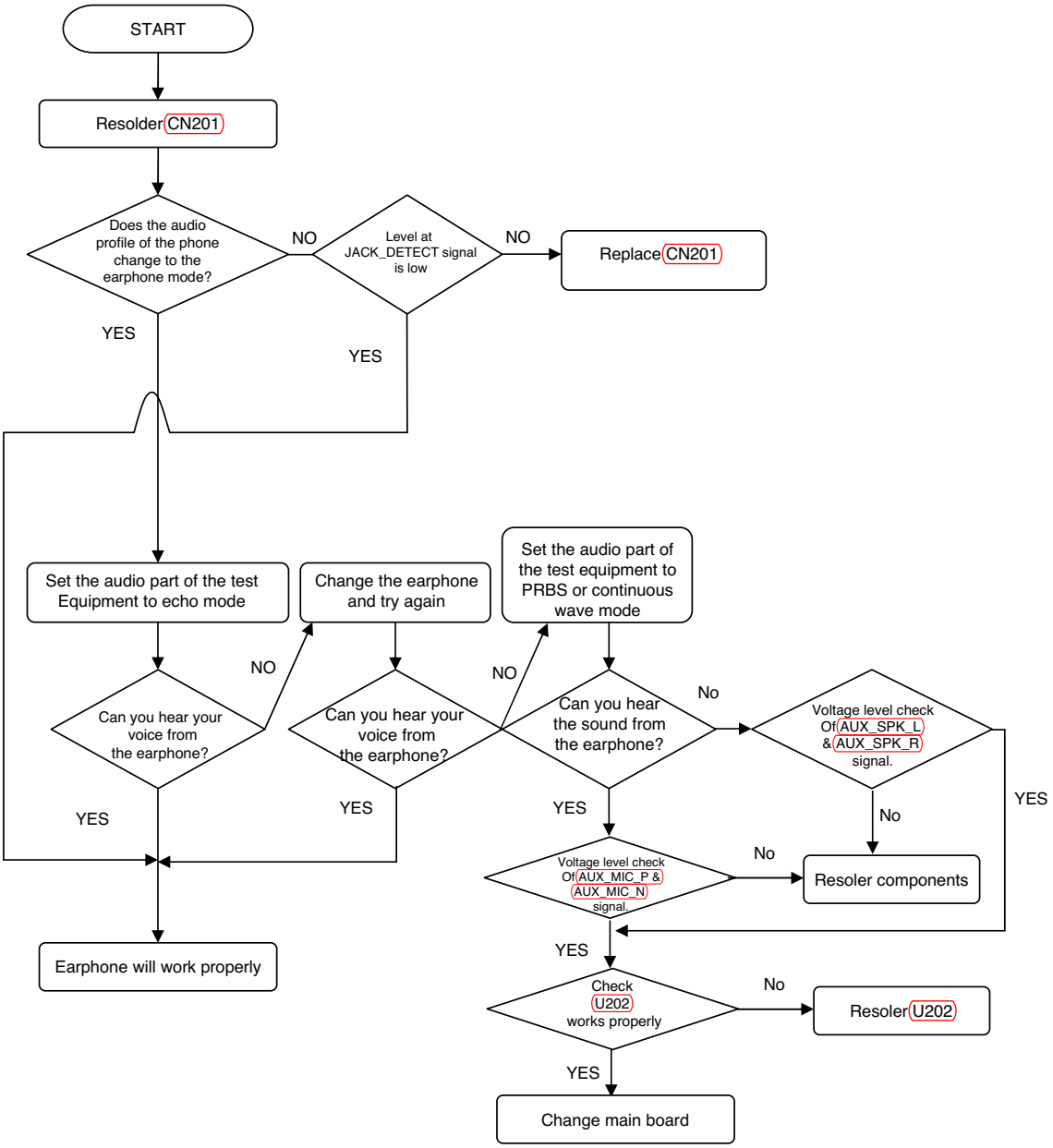
CIRCUIT DIAGRAM



U301

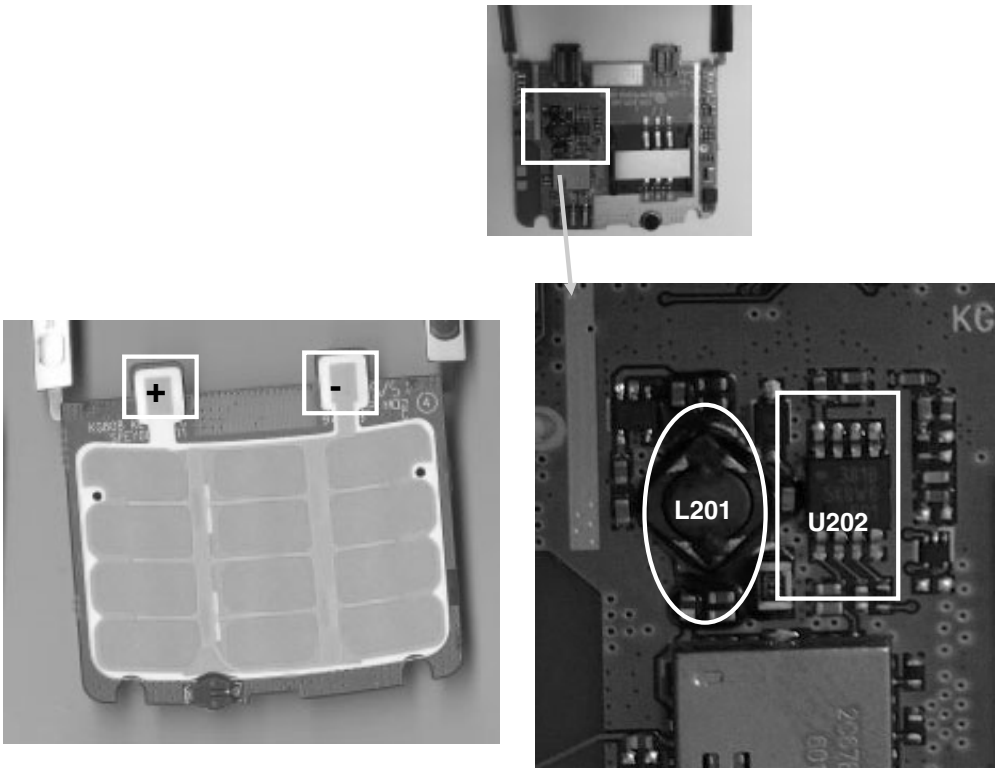
USB_EN(IN3_4)	Jack_Det(IN1_2)	State
0	1	USC
1	D/C	USB
0	0	Jack_ADC

Checking Flow

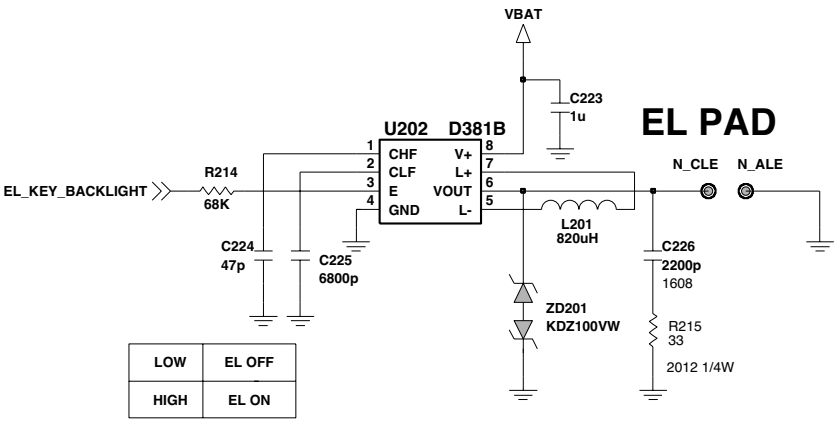


4.11 EL Trouble

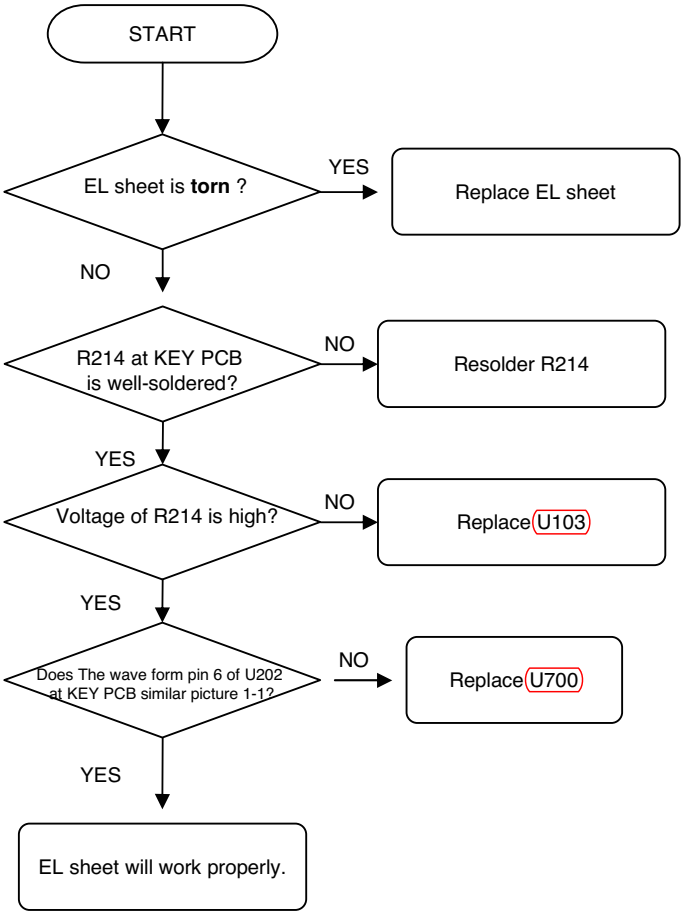
TEST POINT

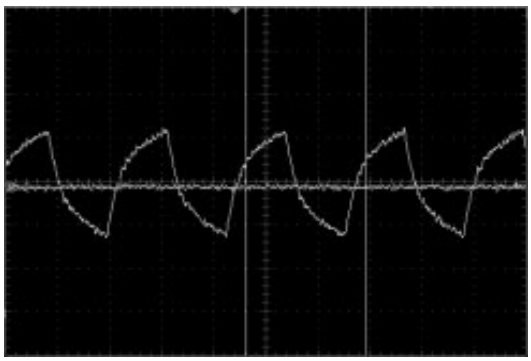


CIRCUIT DIAGRAM



Checking Flow

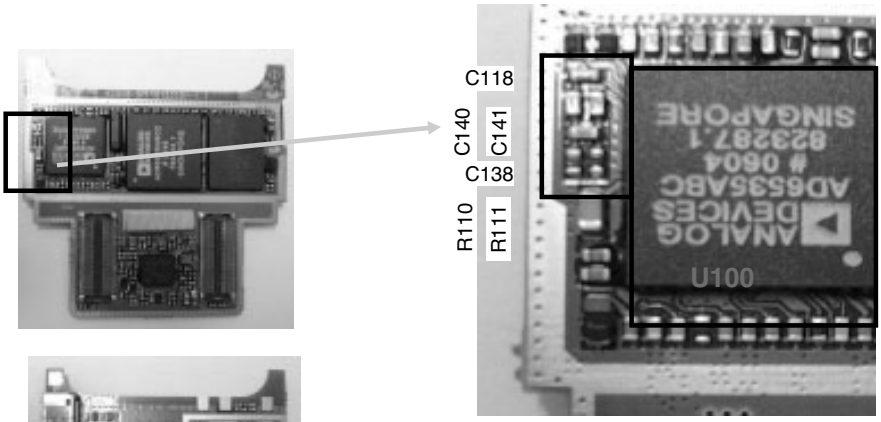


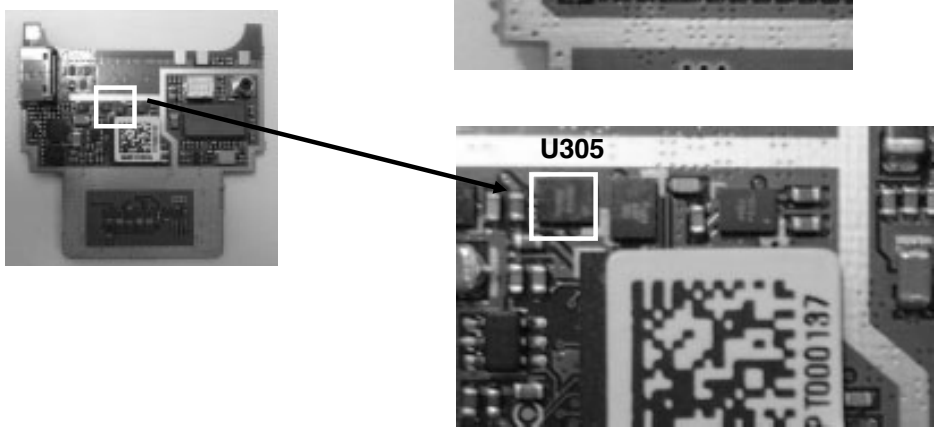


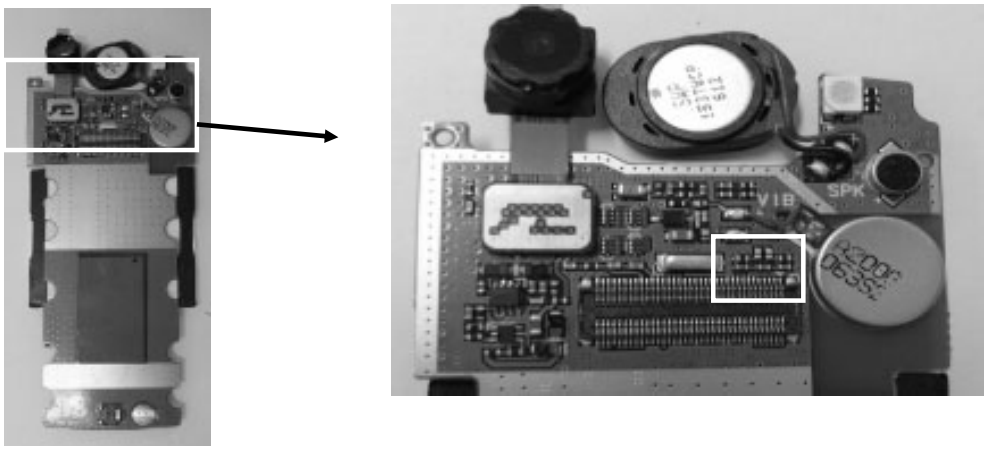
Picture 1-1
Pk to pk : about 220V
Frequecy : about 400Hz

4.12 Receiver Trouble

TEST POINT



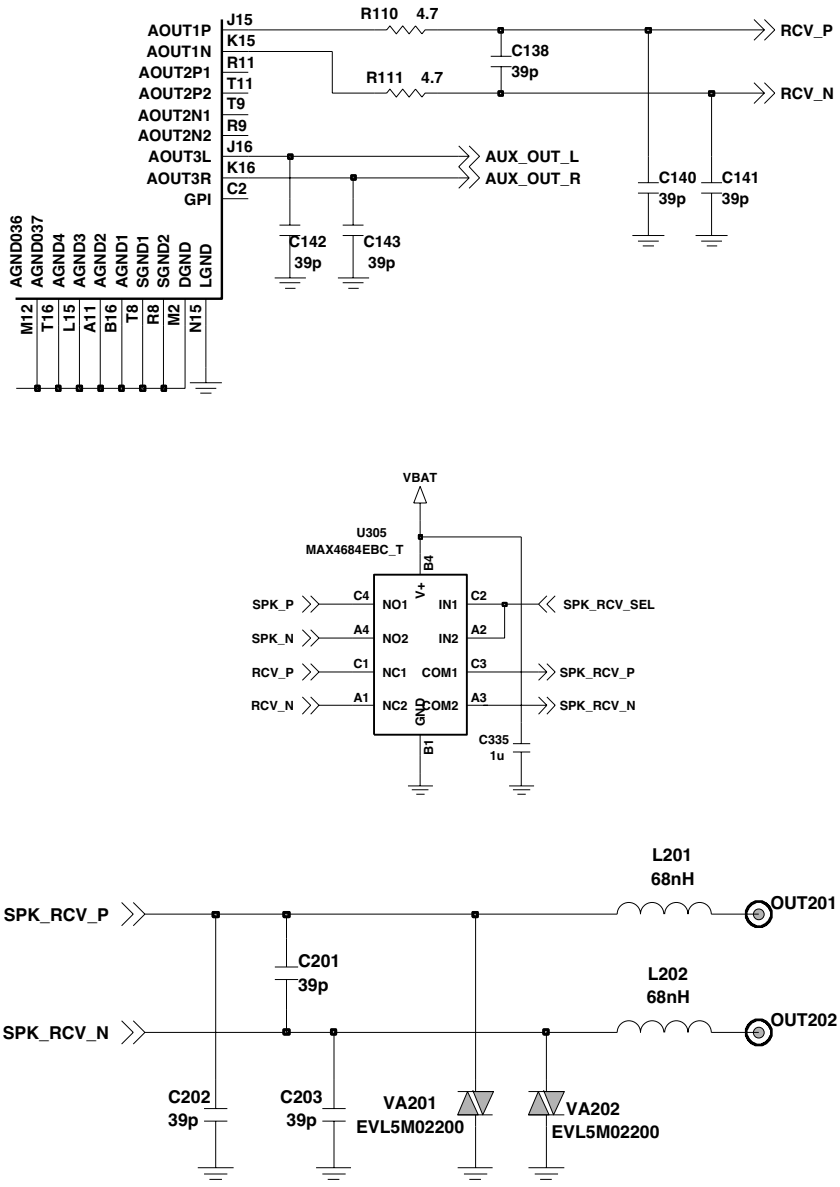




4. TROUBLESHOOTING

Checking Flow

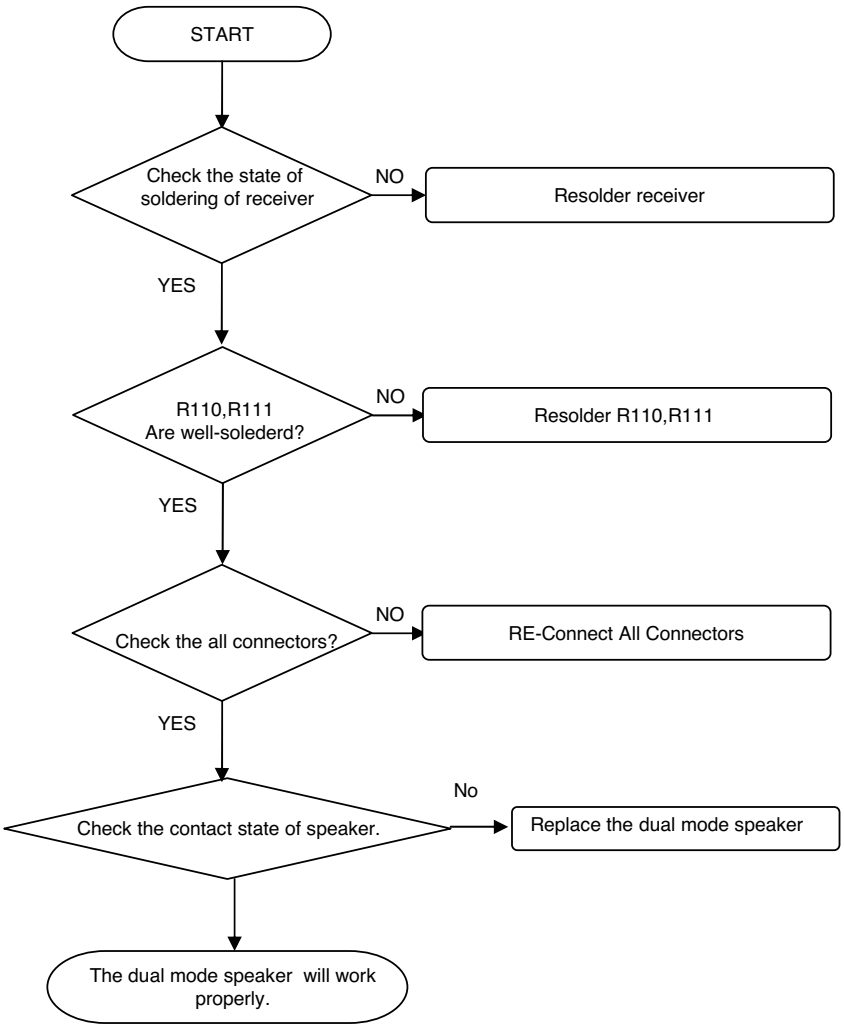
Receiver path to SPK&RCV on Slide PCB via FPCB



Checking Flow

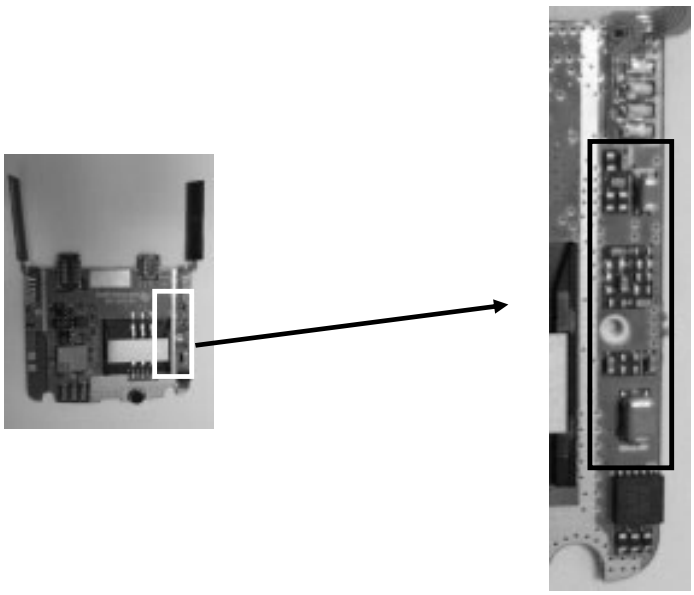
SETTING : After initialize Agilent 8960, Test EGSM, DCS mode

Set the property of audio as PRBS or continuous wave. Set the receiving volume of mobile as Max.

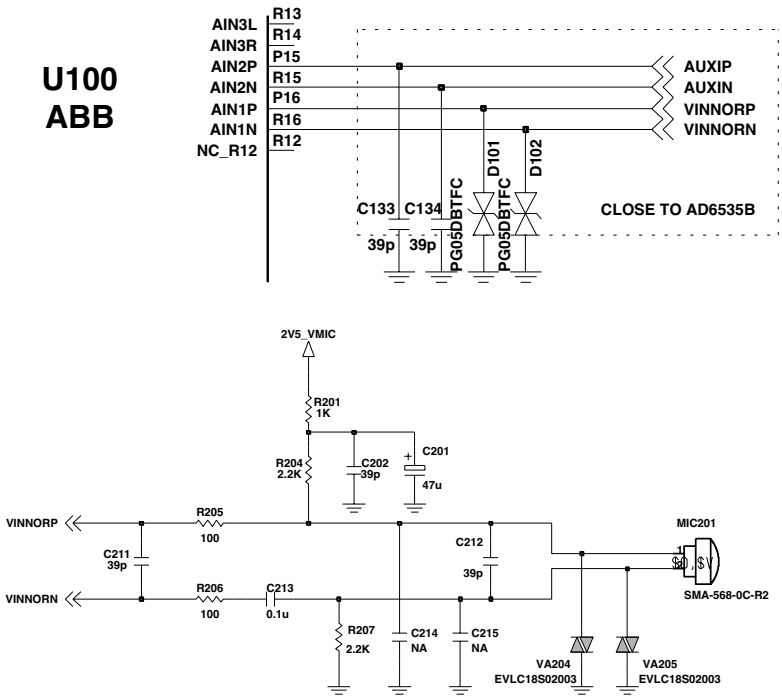


4.13 Microphone Trouble

TEST POINT

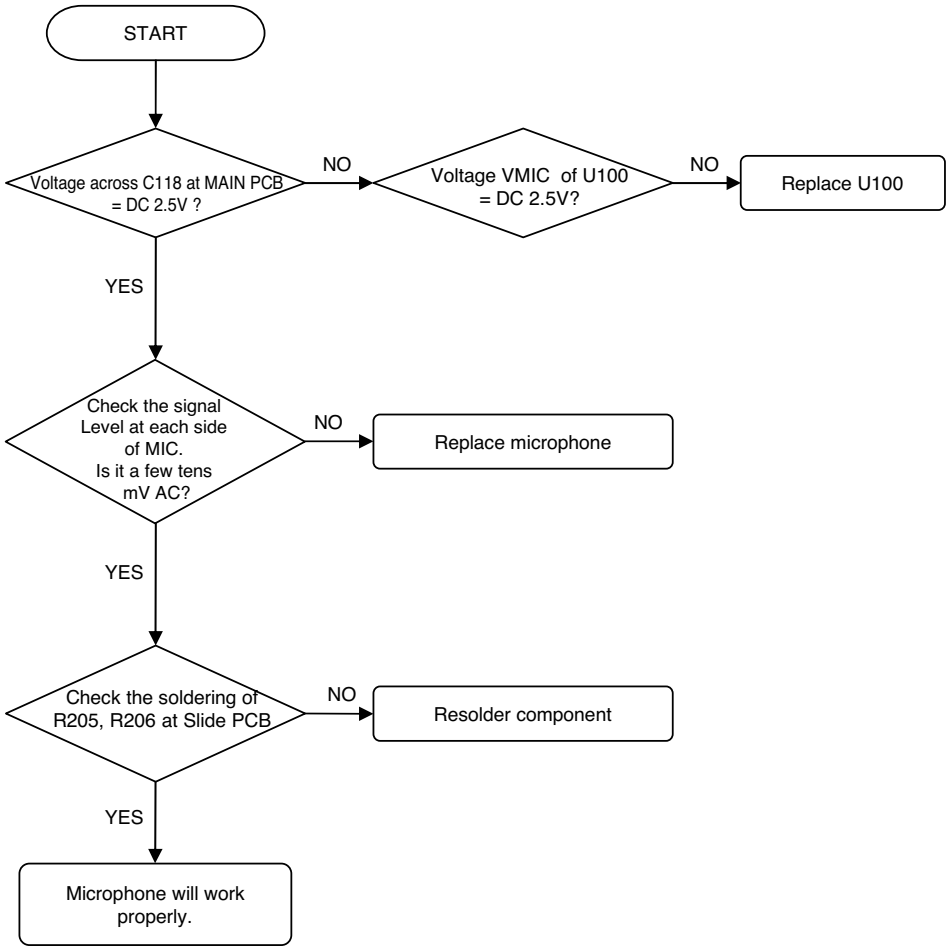


CIRCUIT DIAGRAM



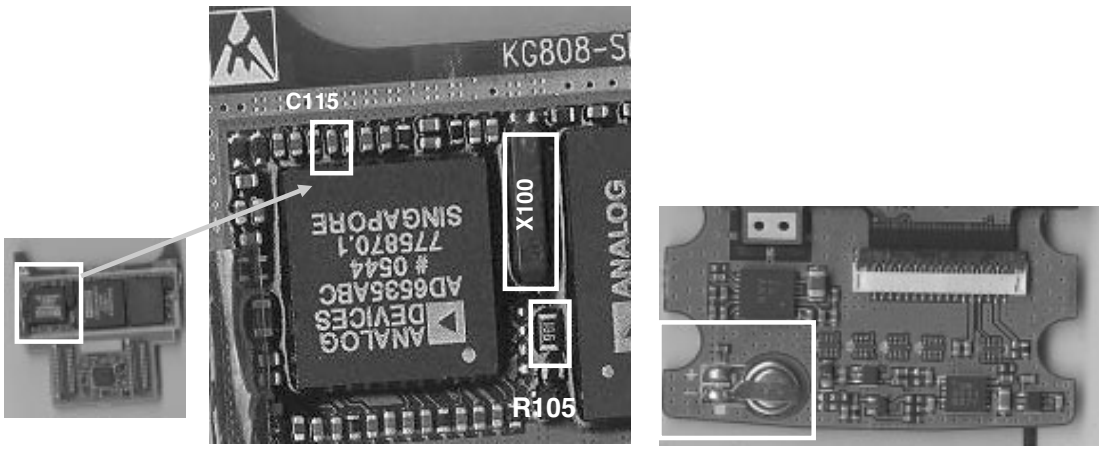
Checking Flow

SETTING : After initialize Agilent 8960, Test EGSM, DCS mode

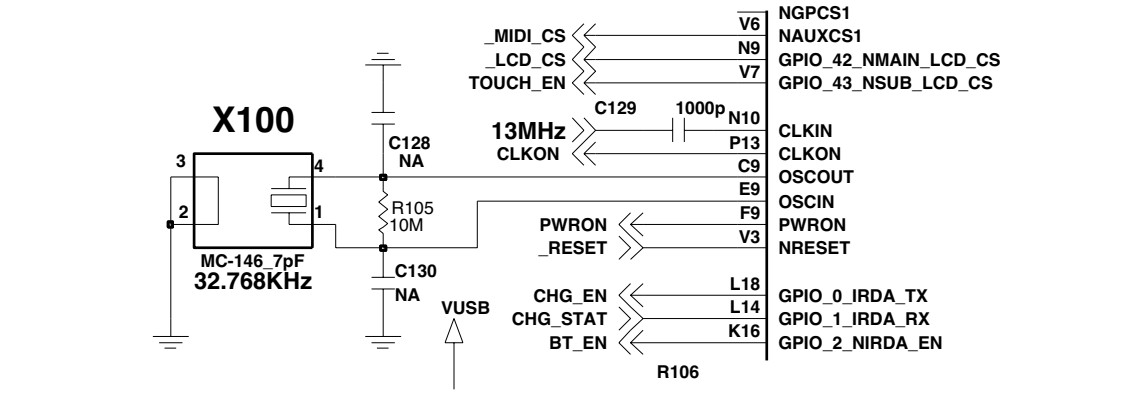


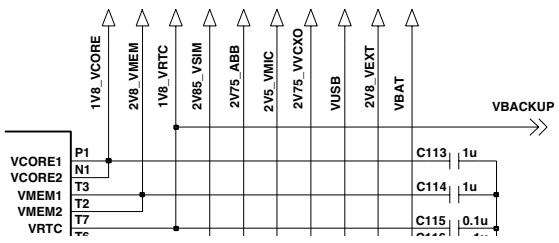
4.14 RTC Trouble

TEST POINT

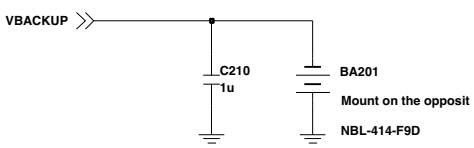


CIRCUIT DIAGRAM



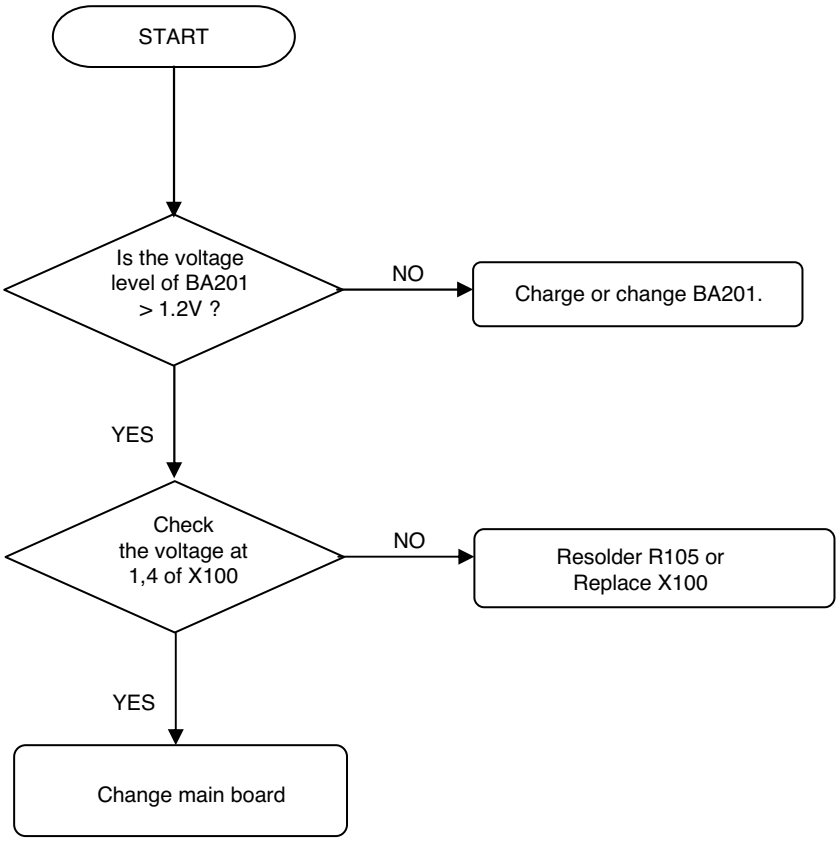


MAIN PCB



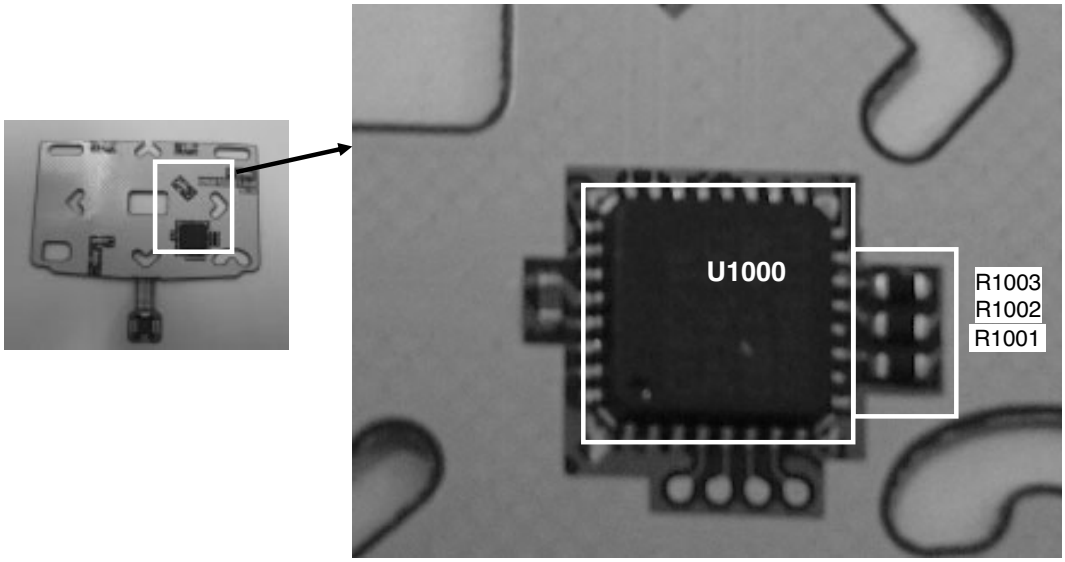
SLIDE PCB

Checking Flow

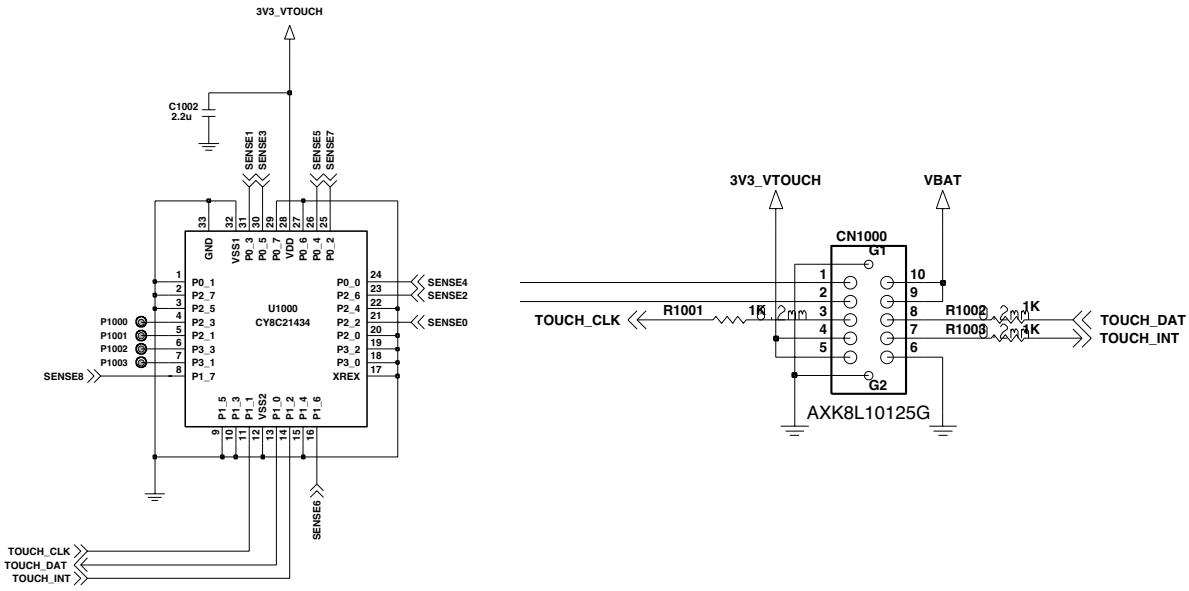


4.15 Navigation KEY Problem

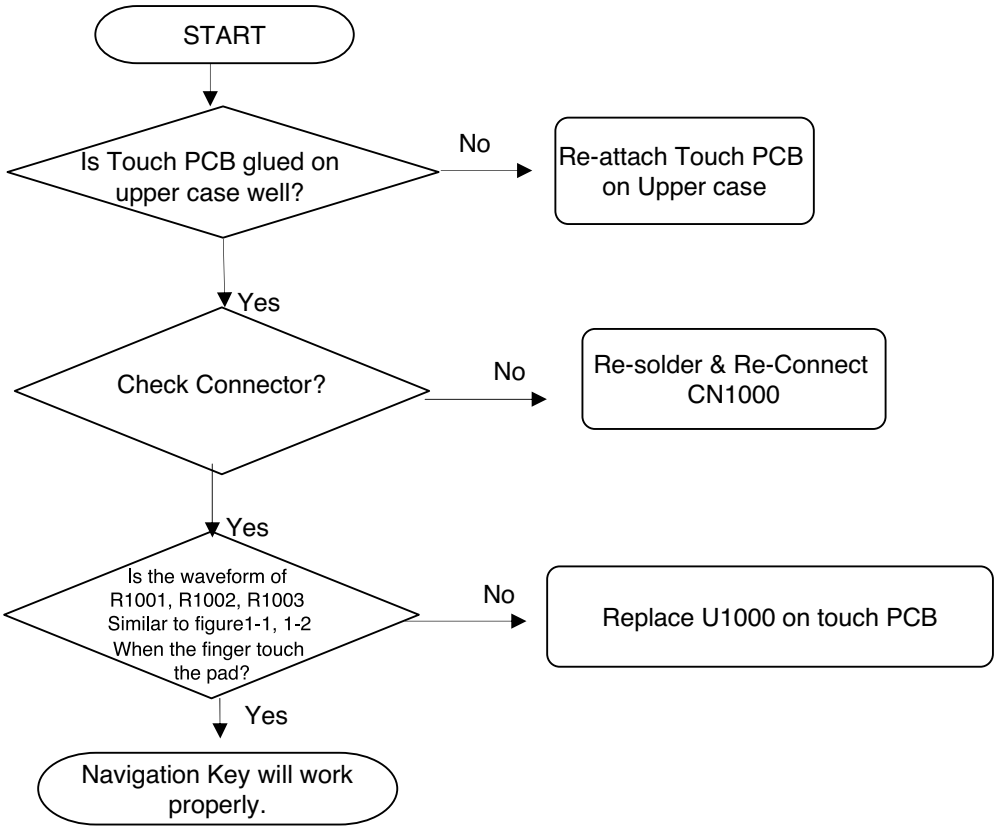
TEST POINT



CIRCUIT DIAGRAM



Checking Flow



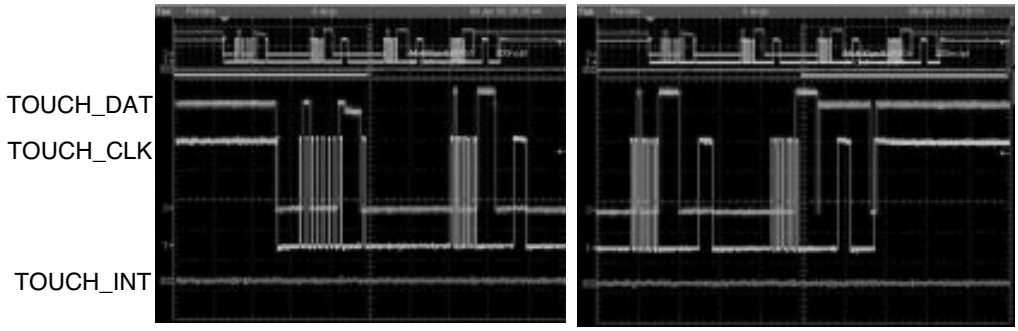
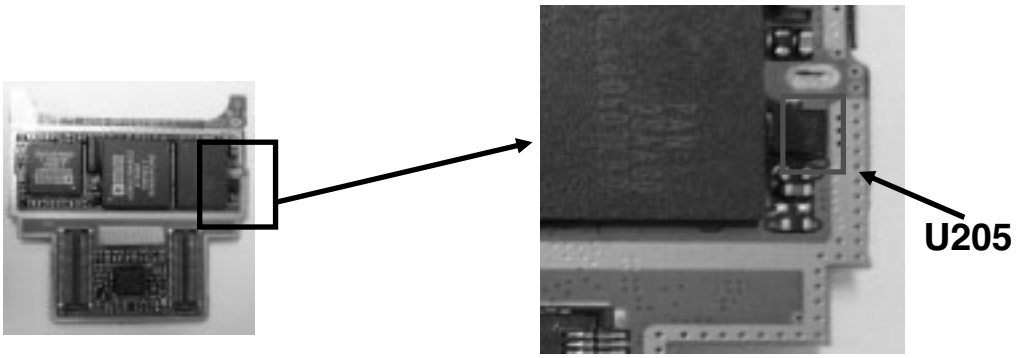


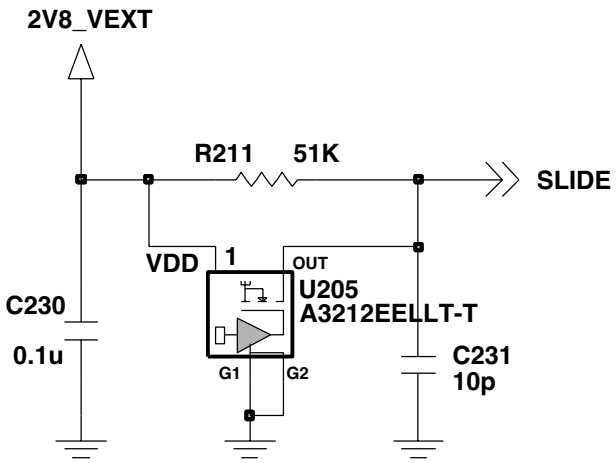
Figure 1-1 **Figure 1-2**

4.16 Slider Detection

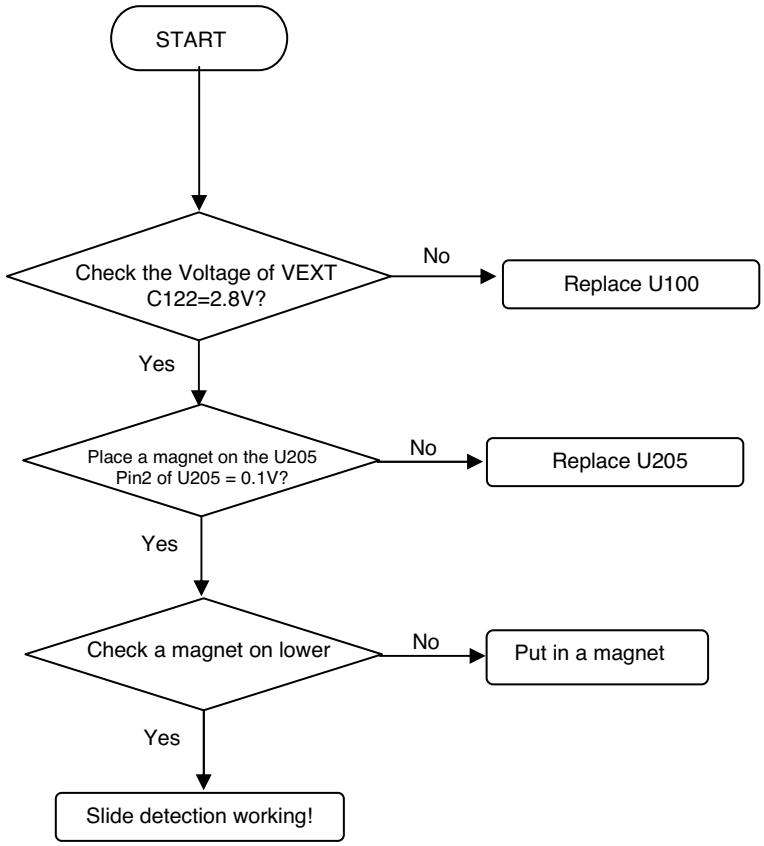
TEST POINT



CIRCUIT DIAGRAM



Checking Flow

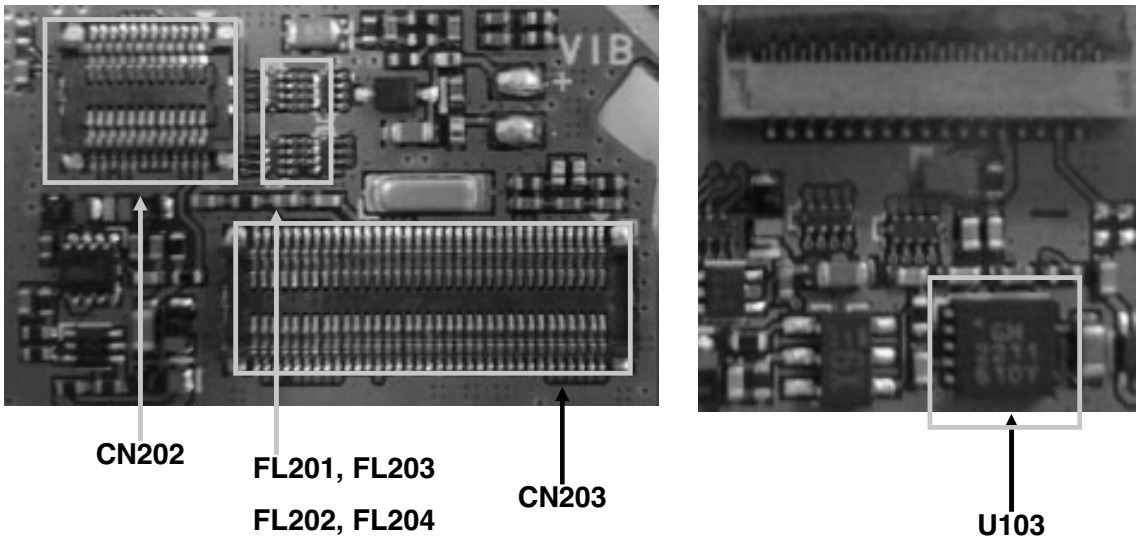


4.17 Camera

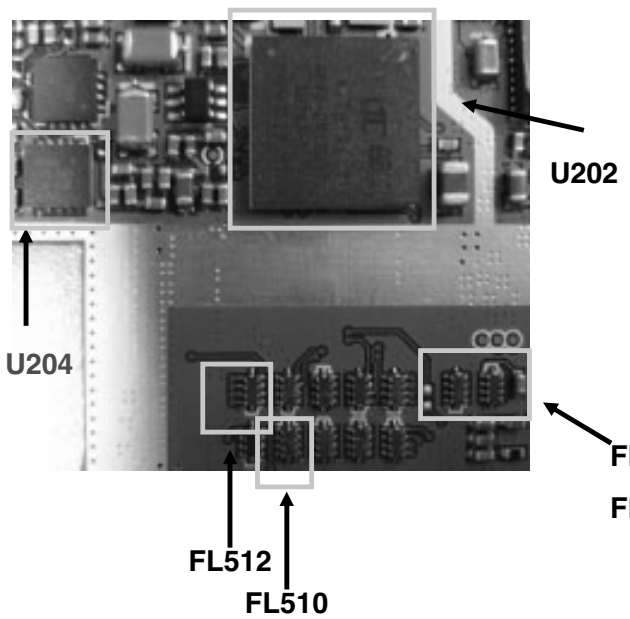
TEST POINT

SETTING : Enter the engineering mode, and set camera mode on at camera of BB test menu

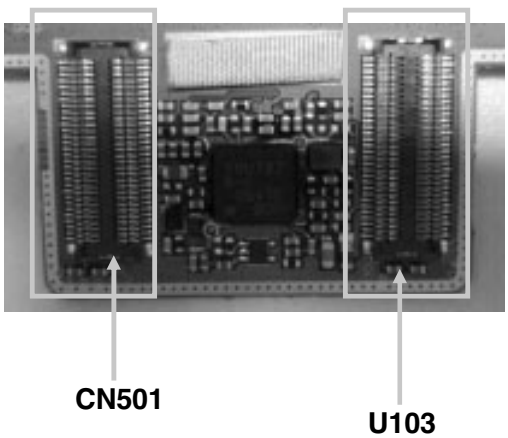
SLIDE PCB



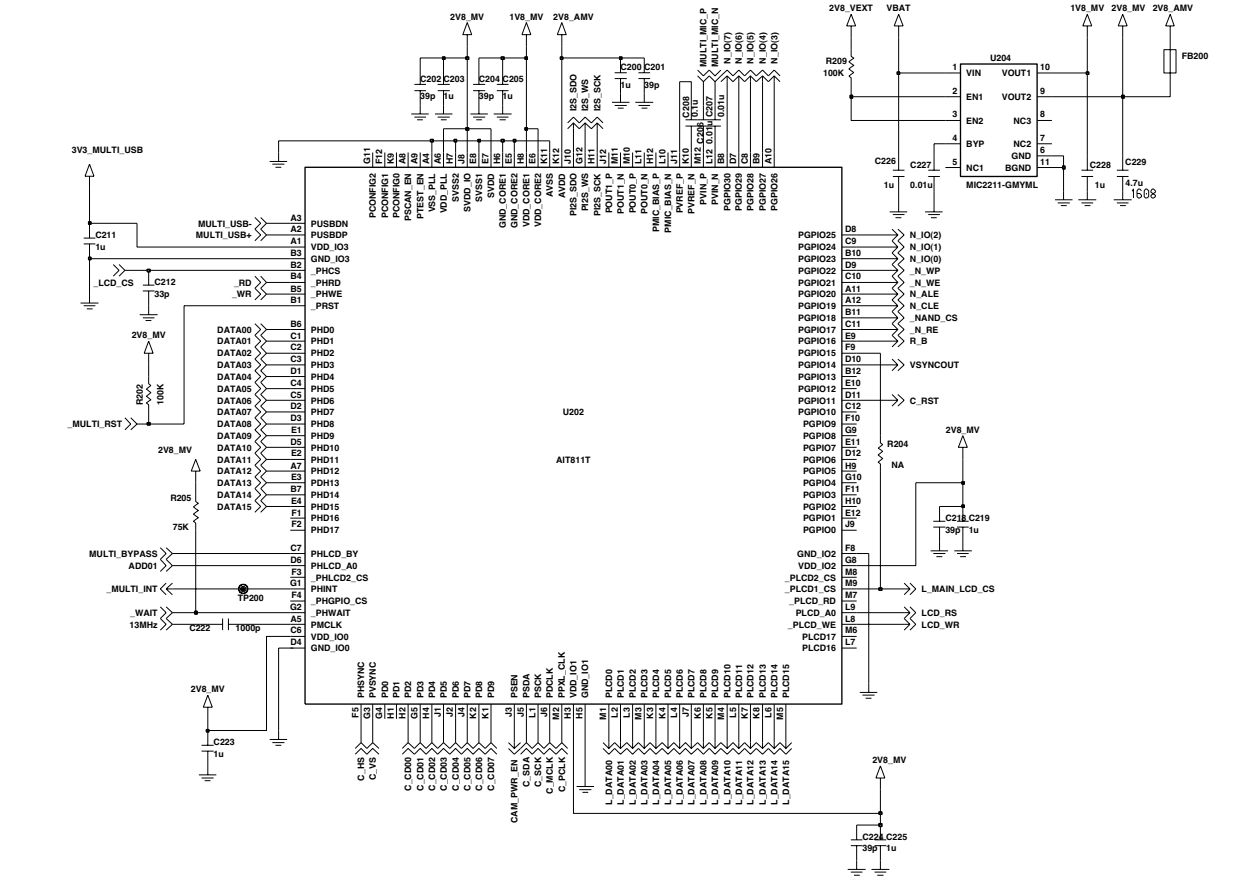
Main PCB



Main PCB



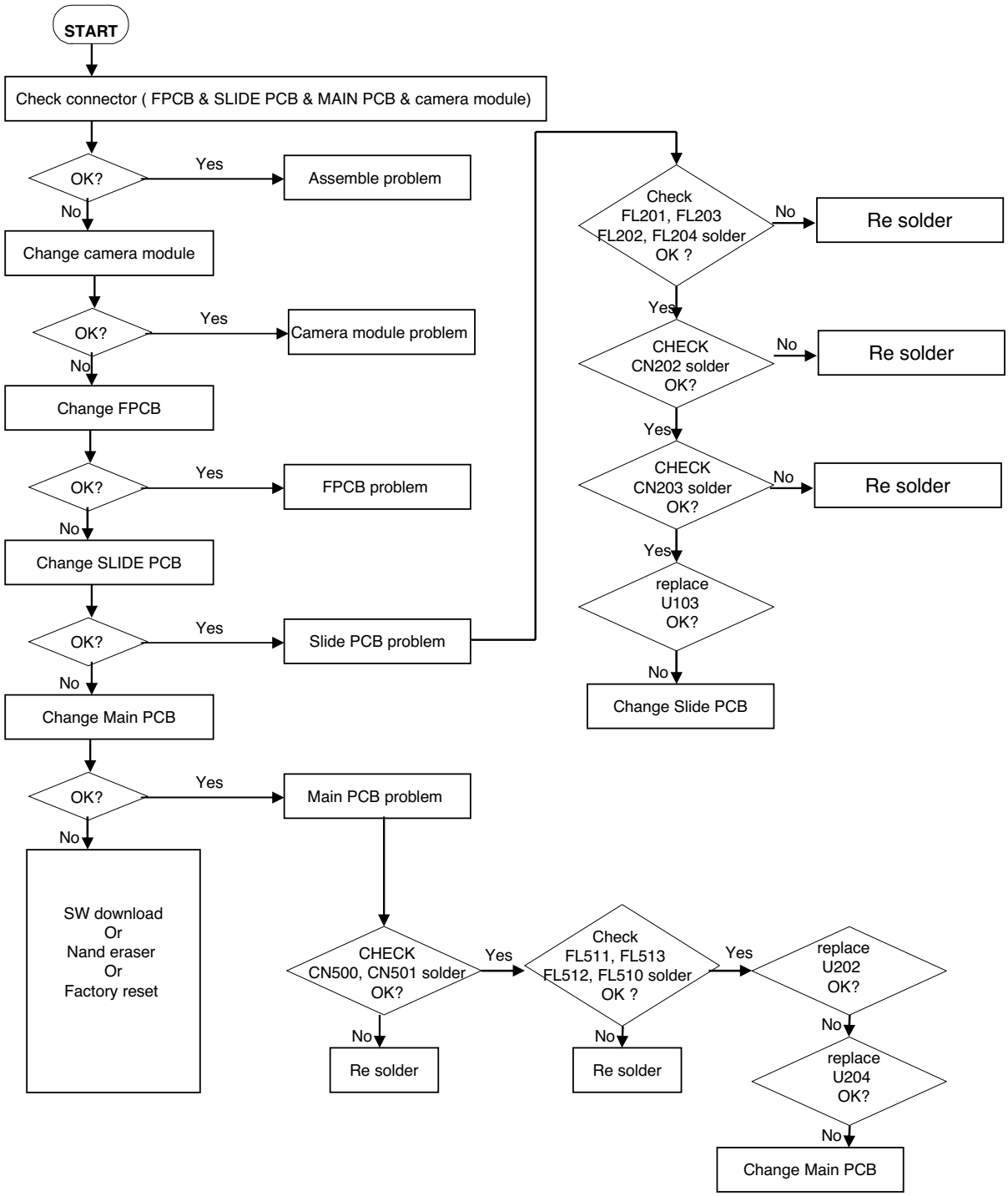
CIRCUIT DIAGRAM



4. TROUBLESHOOTING

Checking Flow

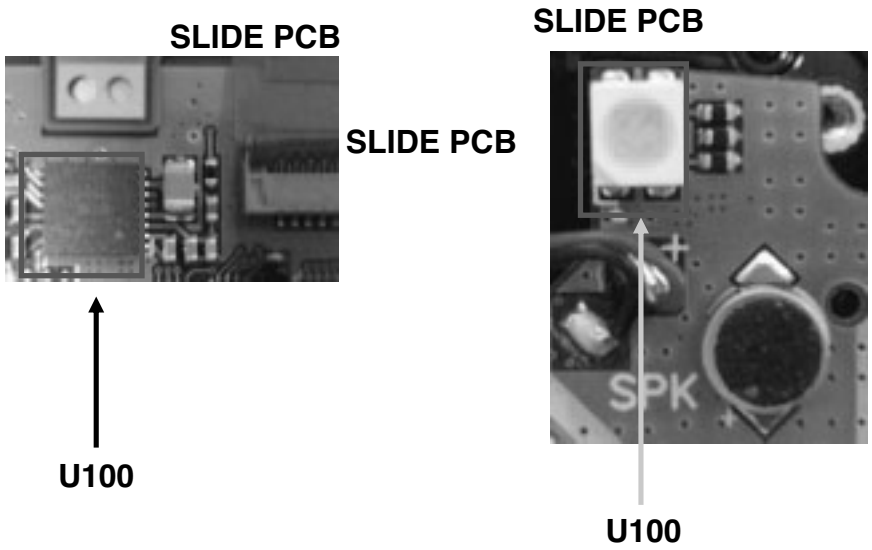
SETTING : Enter the engineering mode, and set camera mode on at camera of BB test menu



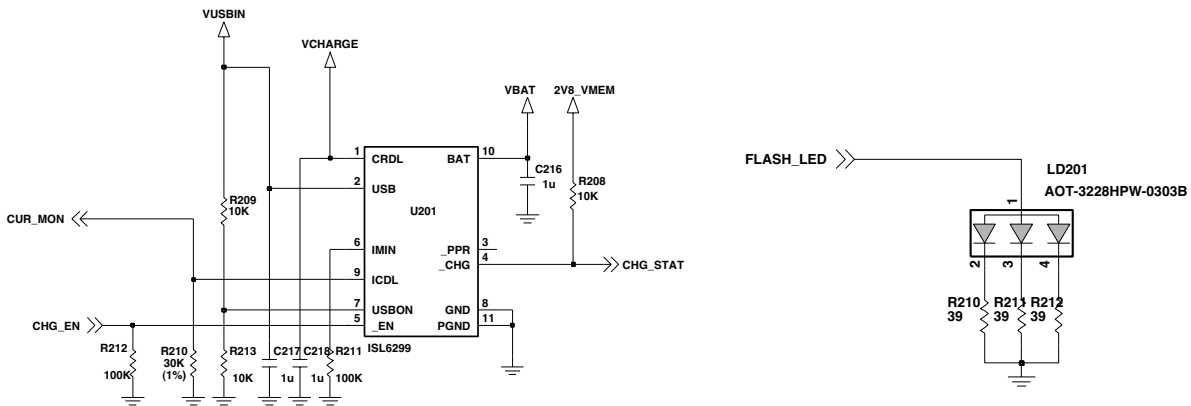
4.18 Flash Trouble

TEST POINT

SETTING : Enter the engineering mode, and set Flash on at camera of BB test menu

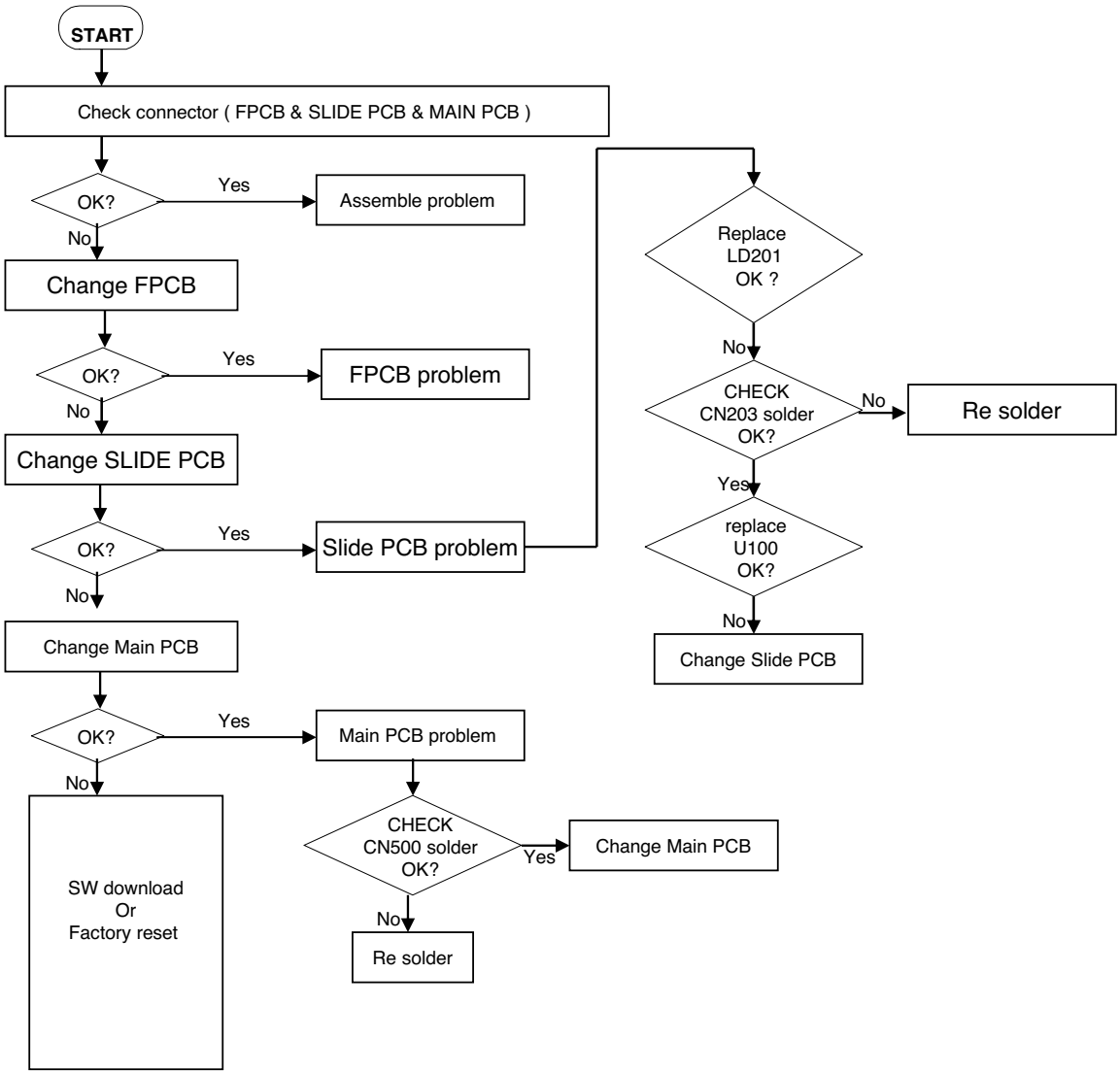


CIRCUIT DIAGRAM



4. TROUBLESHOOTING

Checking Flow

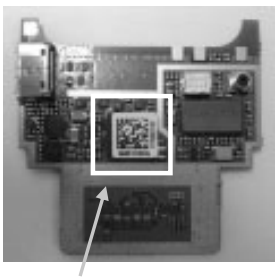


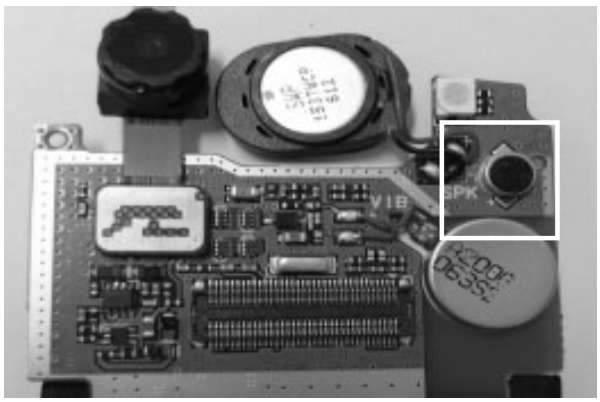
4.19 Multimedia MIC

TEST POINT

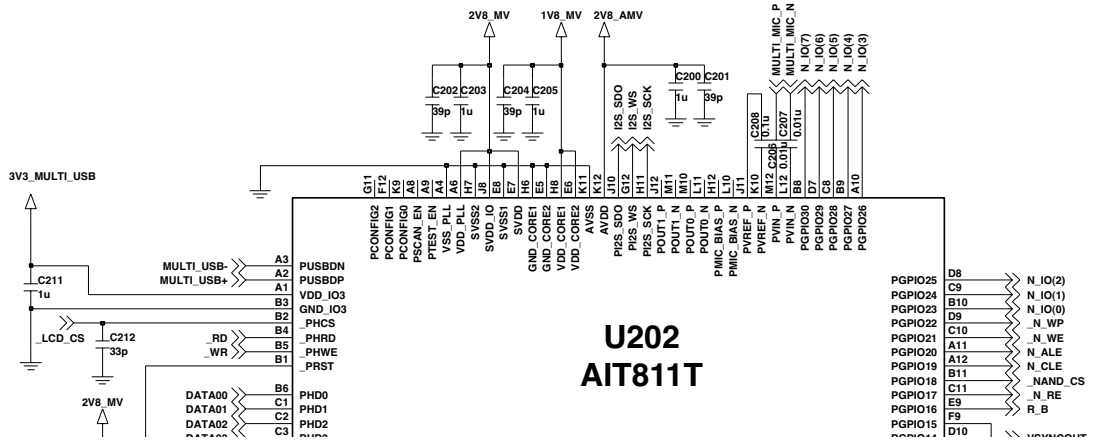
SLIDE PCB

MAIN PCB

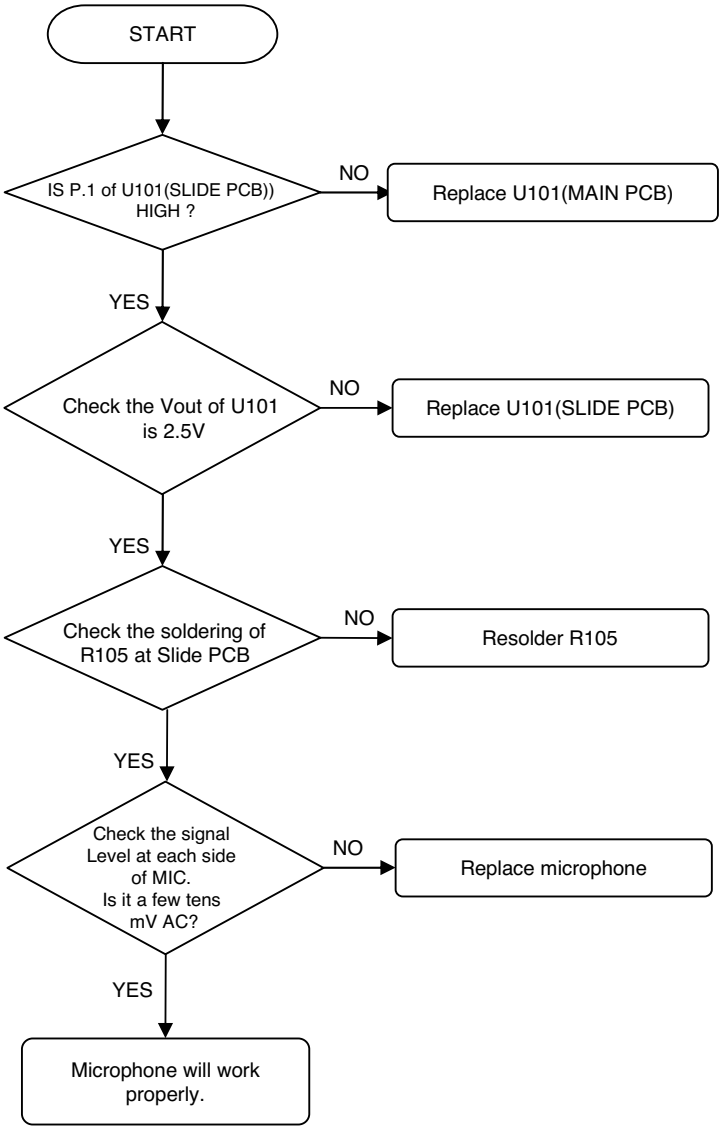




CIRCUIT DIAGRAM

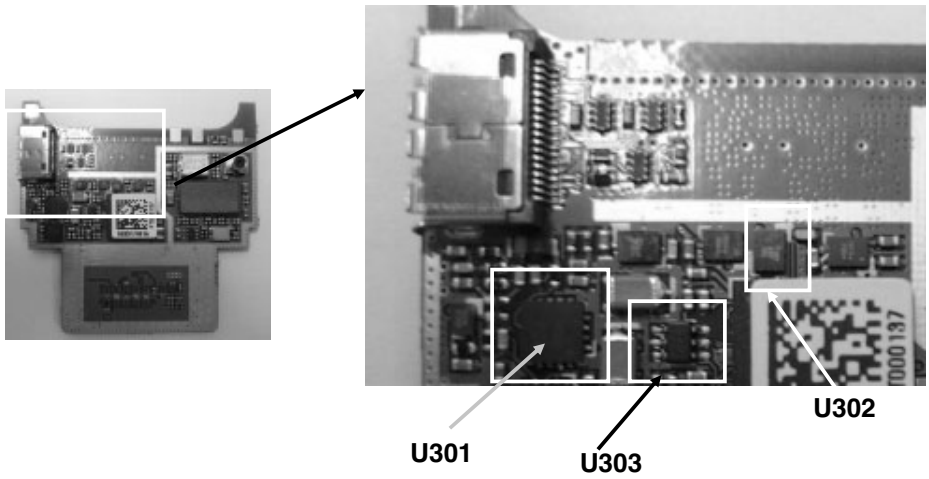


SETTING : Enter the engineering mode, and set video camera mode on at MF test menu

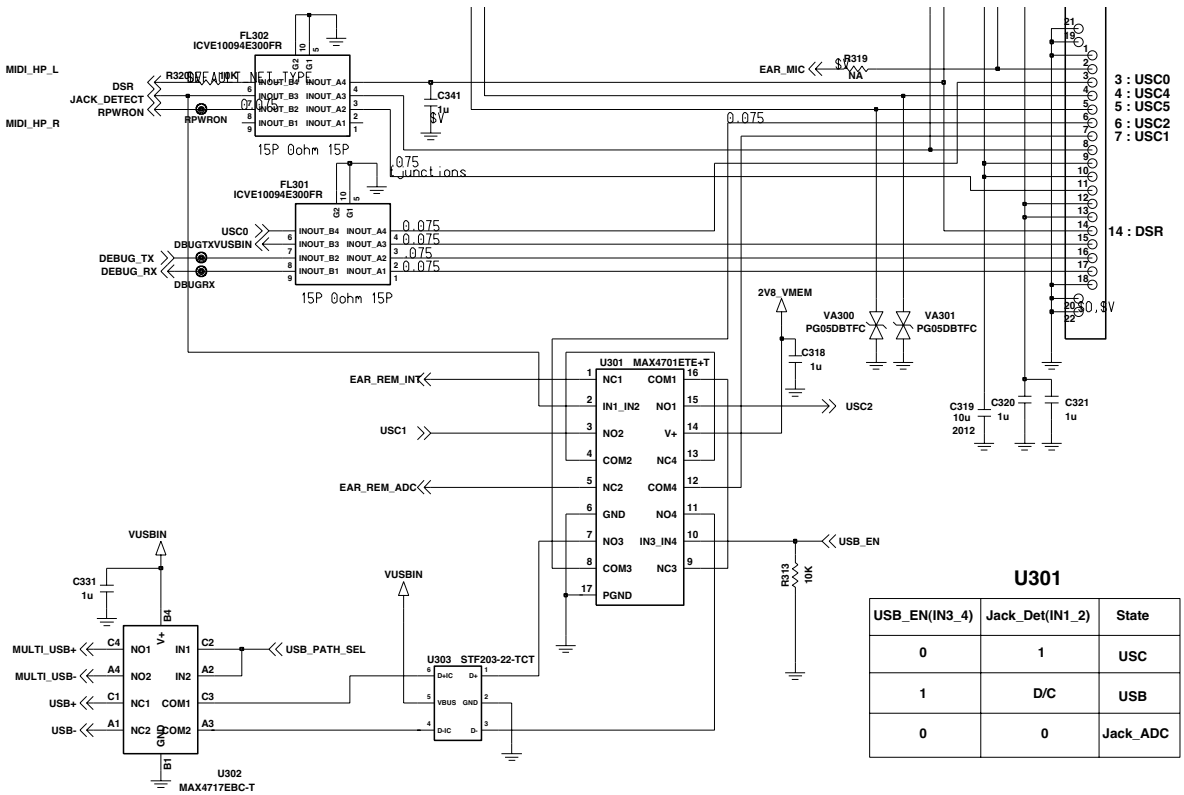


4.20 USB

TEST POINT



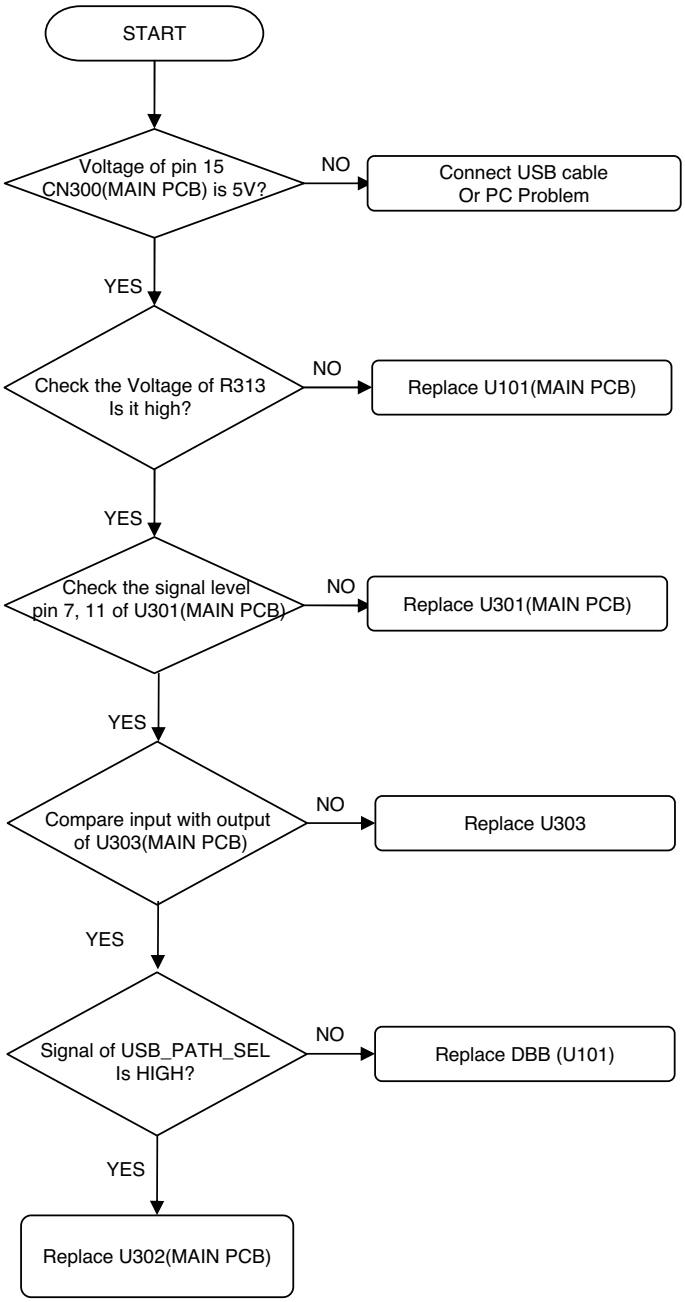
CIRCUIT DIAGRAM



U301

USB_EN(IN3_4)	Jack_Det(IN1_2)	State
0	1	USC
1	D/C	USB
0	0	Jack_ADC

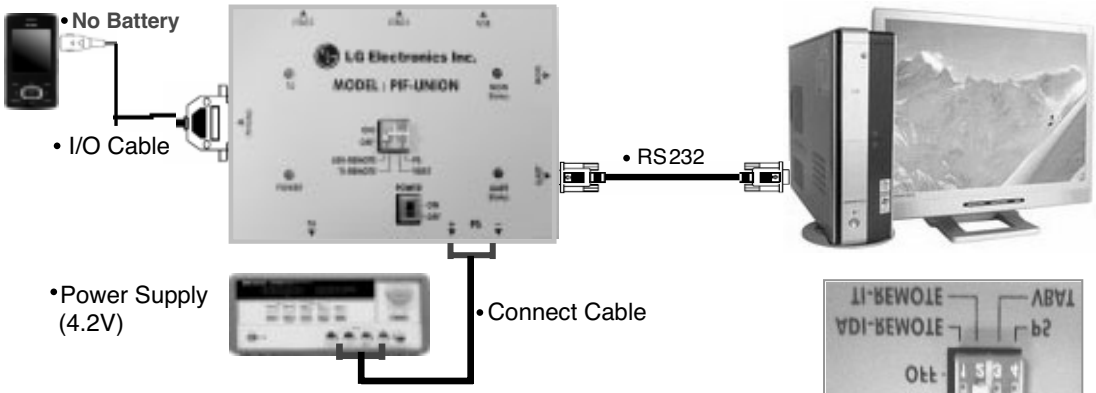
SETTING : Connect Phone to PC with USB DATA cable. Displaying standby screen.



5. DOWNLOAD

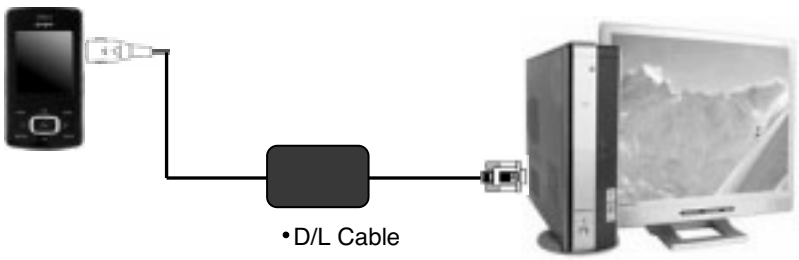
1. H/W Tool Setup

1) PIF Jig

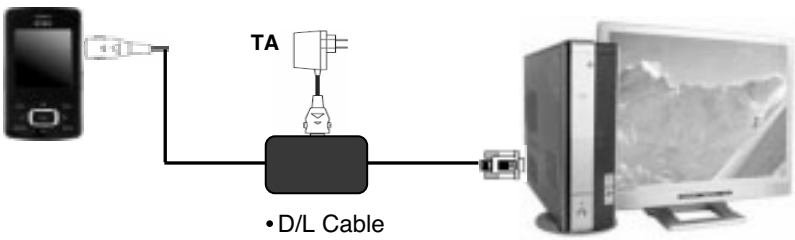


[Switch mode]

2)D/L Cable



[Insert! Battery]



[No Battery]

2. Install & Directory structure

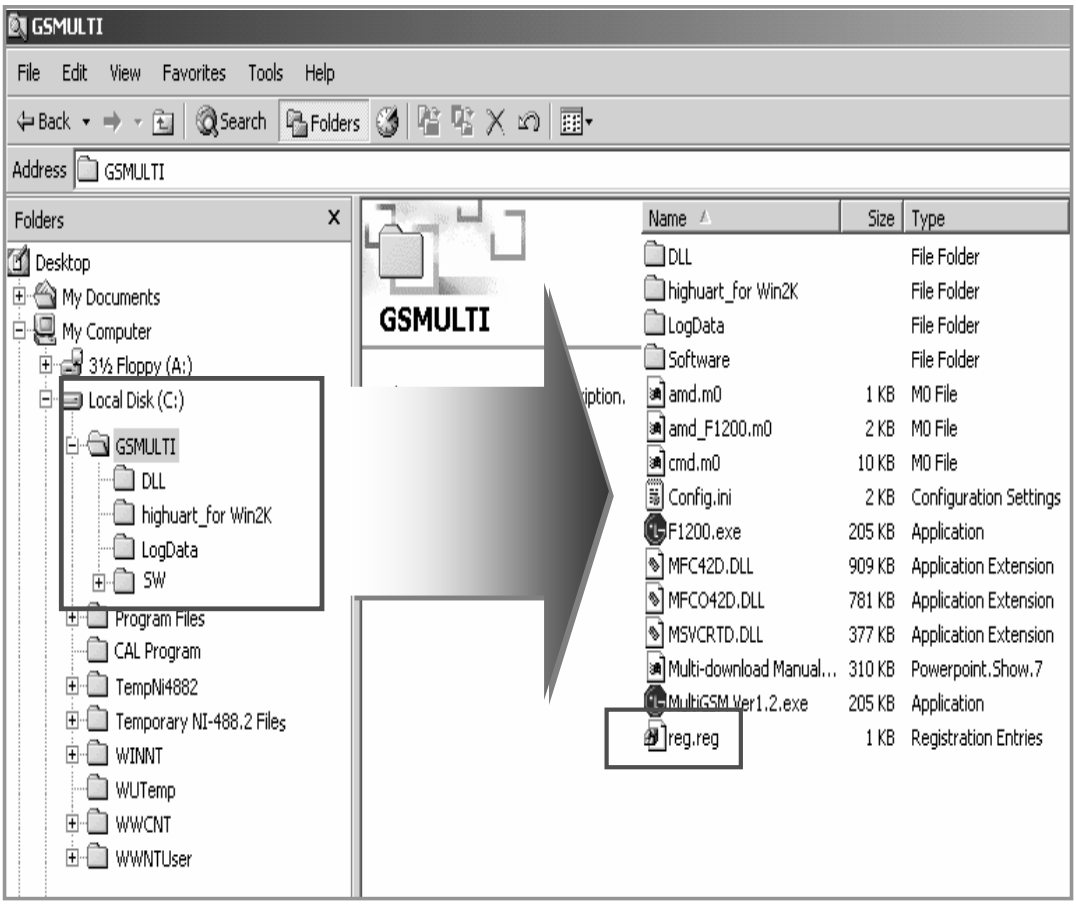
1) Copy! GSMULTI D/L Program in local Disk(C:)

-Folder name : Only “GSMULTI”
-This program and Dll file and SW is on GCSC Website

2) Registry of GSMULTI Program

-Execute by double click : reg.reg

3)After Install Directory structure



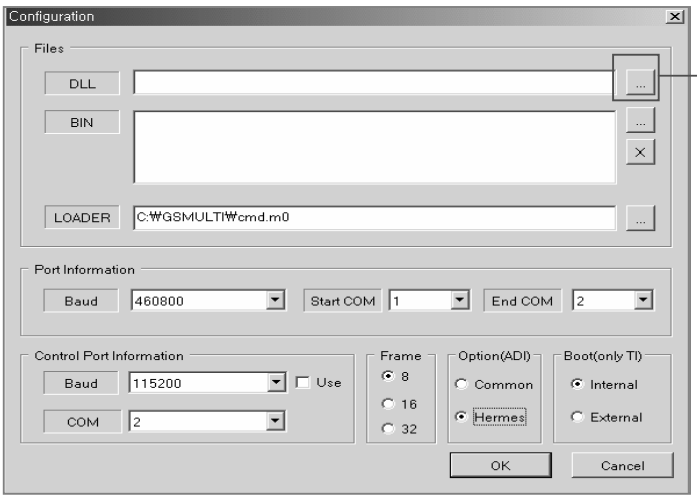
3.Configuration setting

1) Choose DLL

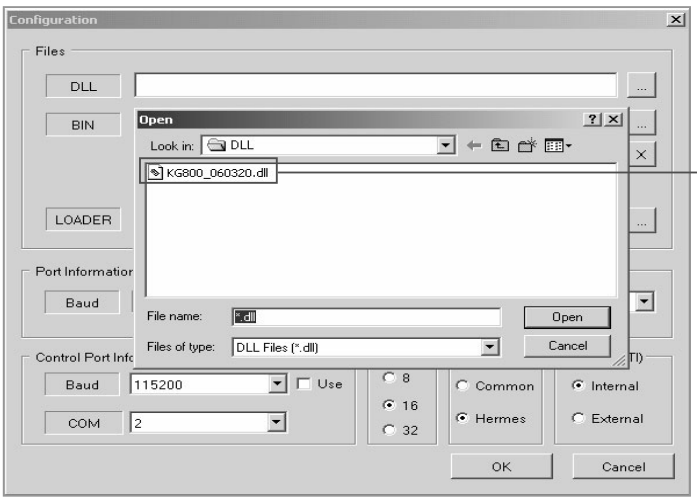
Copy! KG800 DLL File in DLL folder

MG800c DLL File in DLL folder

- Path of Dll folder : Local(C:) → GSMULTI Folder → Dll Folder
- Dll file is on GCSC Website



① **Click**



② **Click**

•Path of Configuration Screen

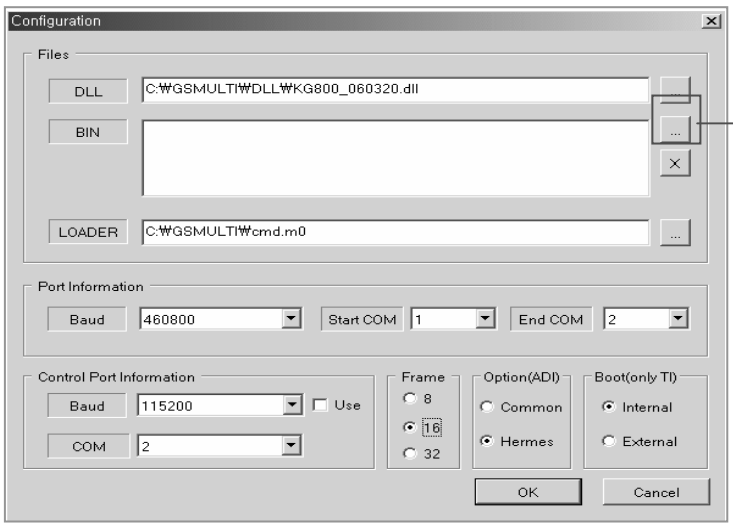
Local(c:) → GSMULTI → MultiGSM Ver1.2.exe → Setting(S) → Configuration

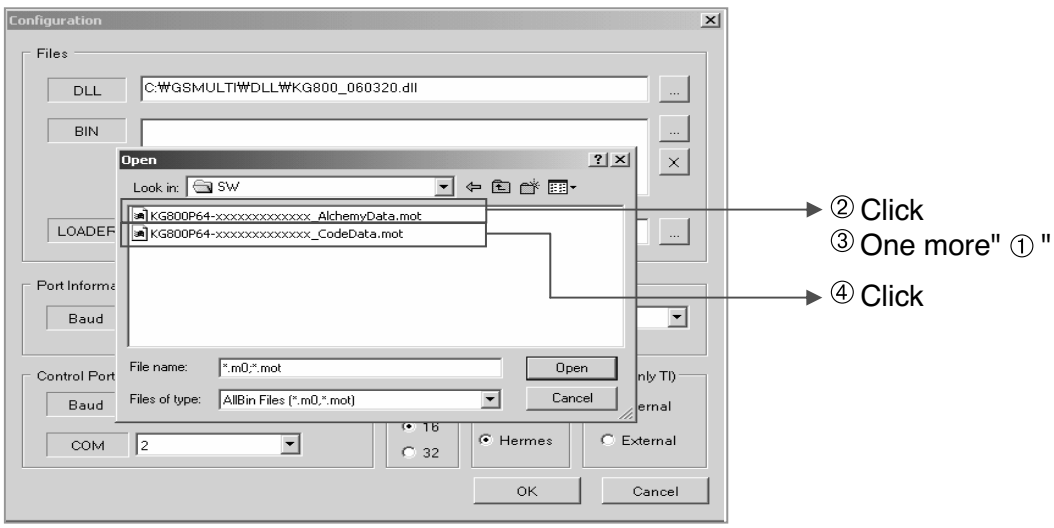
2)Choose SW

Copy! KG800 SW in SW folder

MG800c SW in SW folder

- Path of SW folder : Local(C:) → GSMULTI Folder →SW Folder
- SW is on GCSC Website





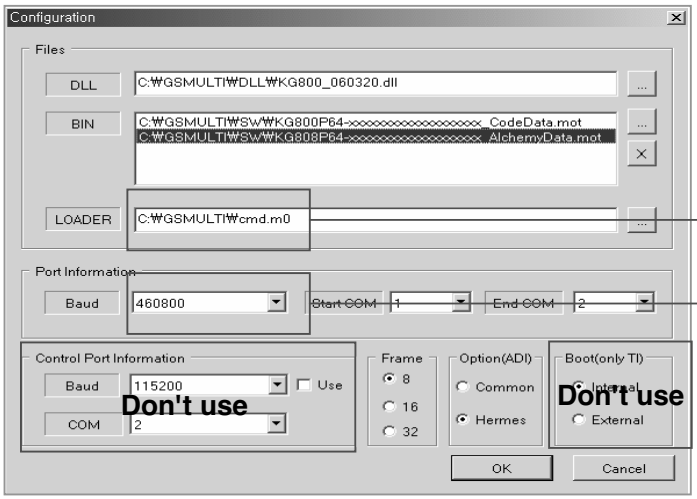
•SW Name Format

KG800P64-xxxxxxxxxxxxxxxxxx_CodeData.mot
KG808P64-xxxxxxxxxxxxxxxxxx_AlchemyData.mot

Difference as per country

3)Choose Loader & Baud

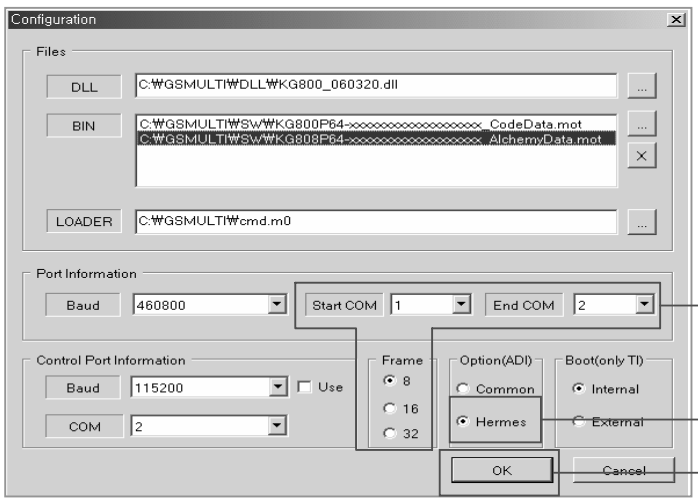
- Loader file is in GSMULTI Folder
  (Path:Local(C:) → GSMULTI Folder)



Default setting value

Only baud rate is 460,800
(HighUart pro. Should be Setup,
In case HighUart pro is not set up,
plz set baud rate as 112,000)

4) Others Setting

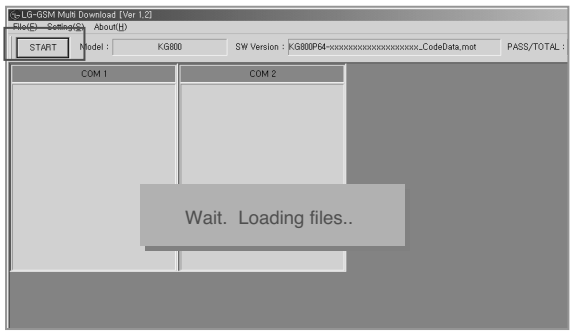


Capability
to change necessary condition

Only Hermes

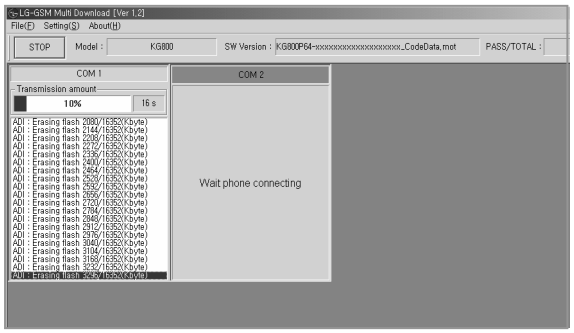
After setting completed
"OK" Click.

4.Download sequence

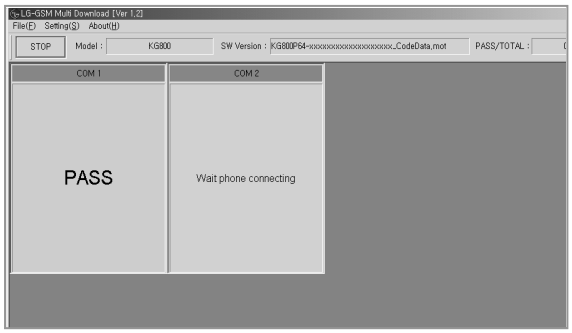


After connect the phone then click "START"
(Power should be off)
-Reference page 1

Power supply to phone



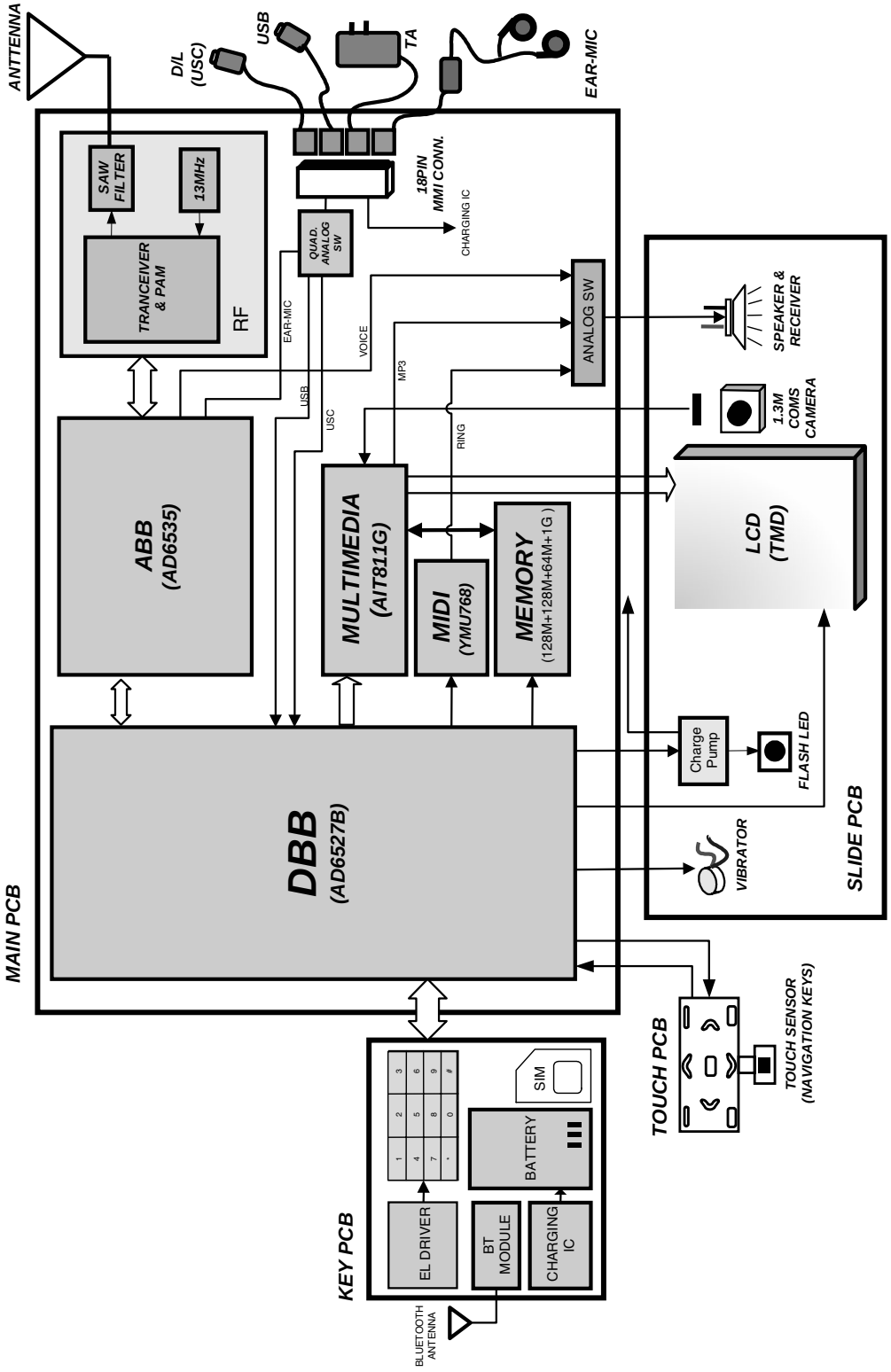
Running Time = 900sec



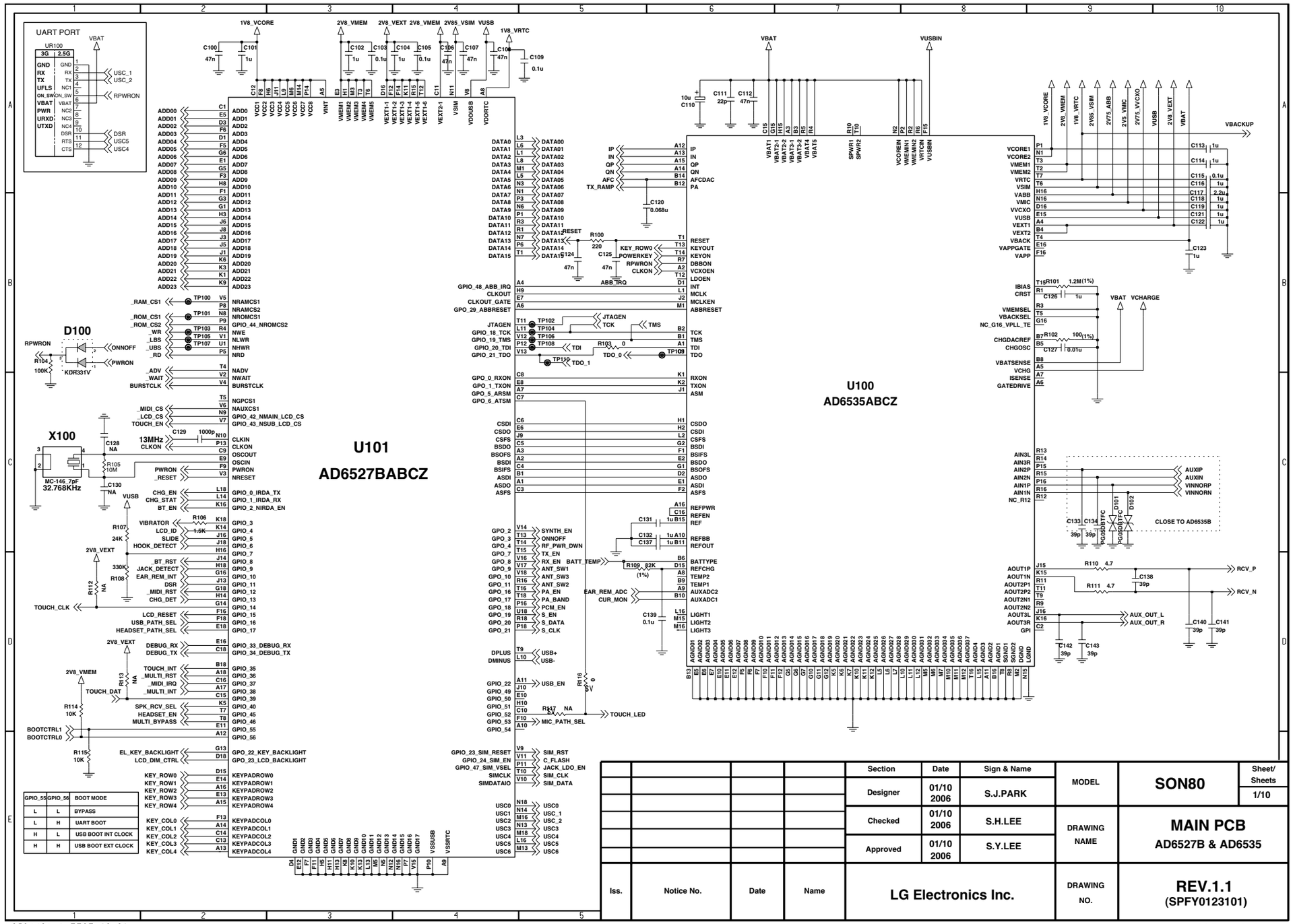
After passing program
and confirming phone power on.
and then disconnect cable from phone.

When you follow up this procedure, If you have some problem,
Pls. do again first.

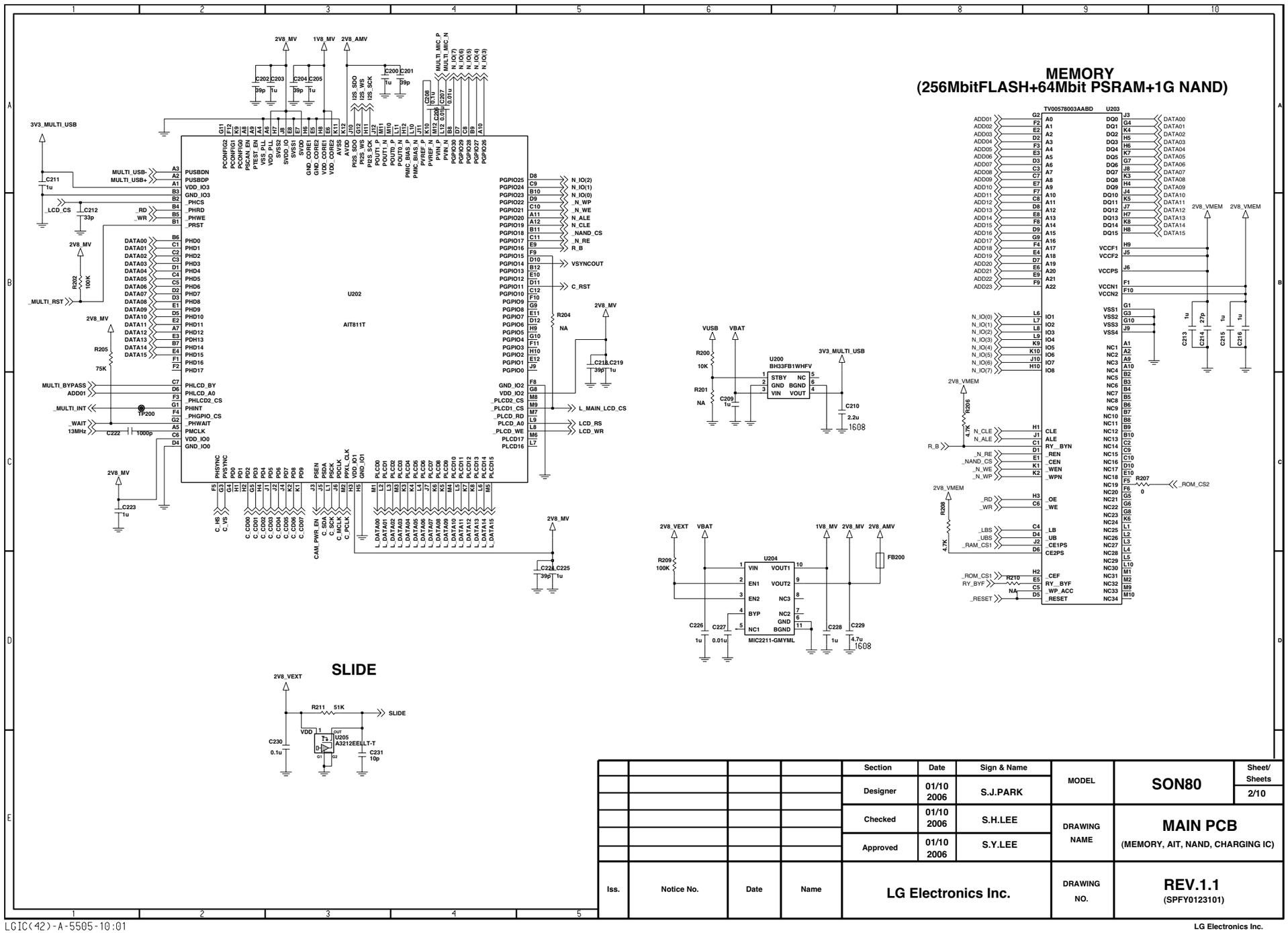
6. BLOCK DIAGRAM



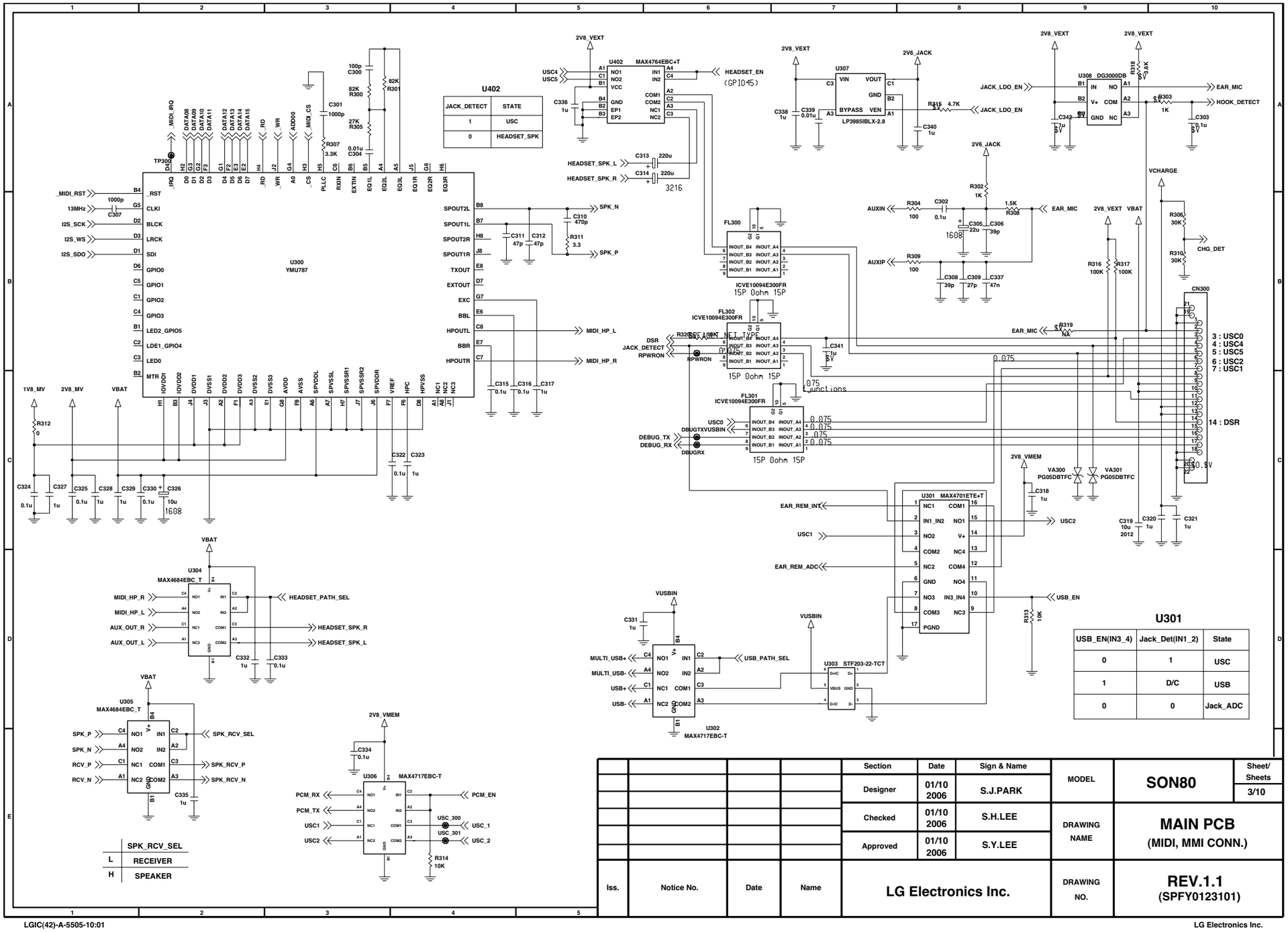
7. CIRCUIT DIAGRAM



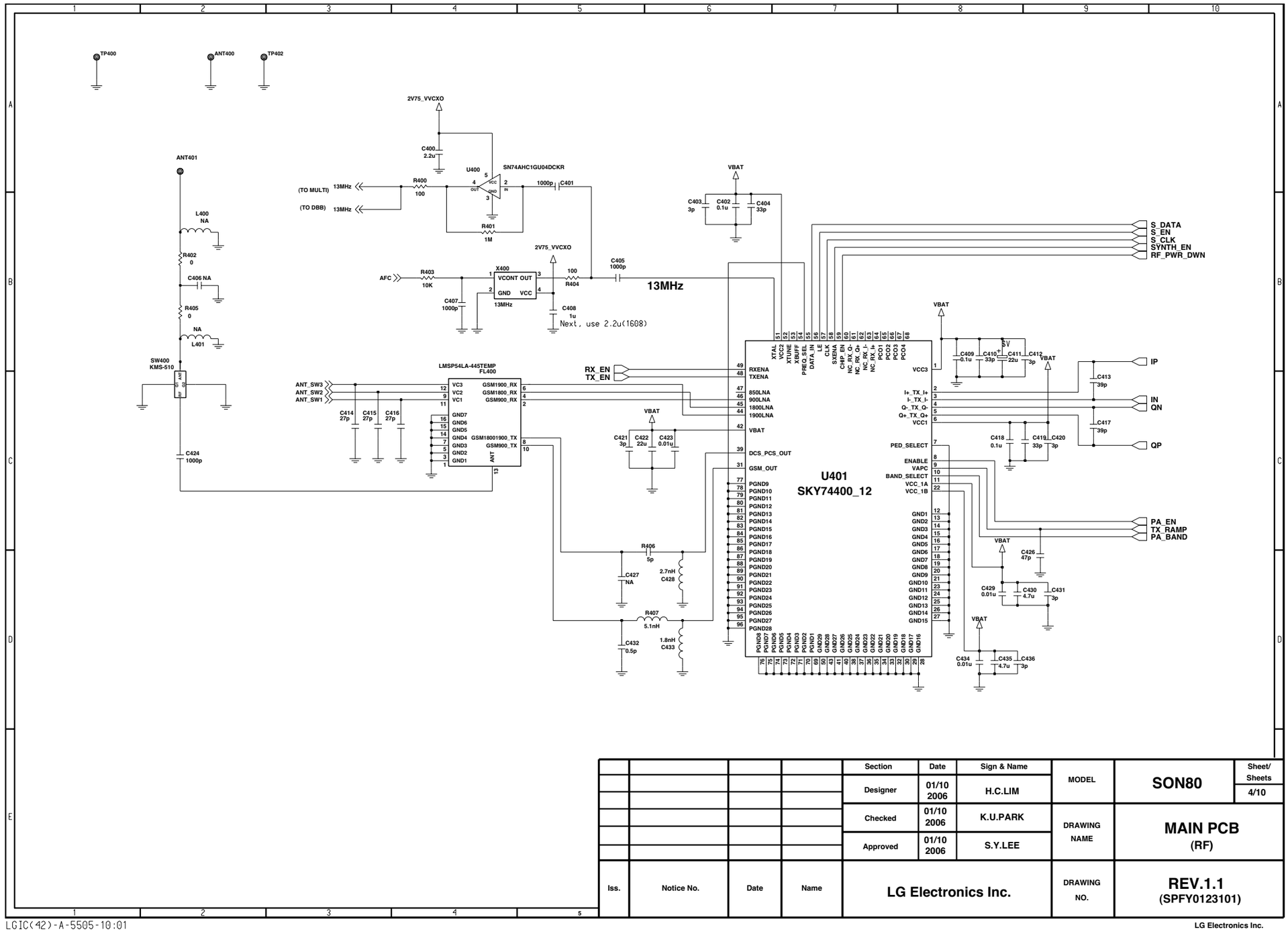
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

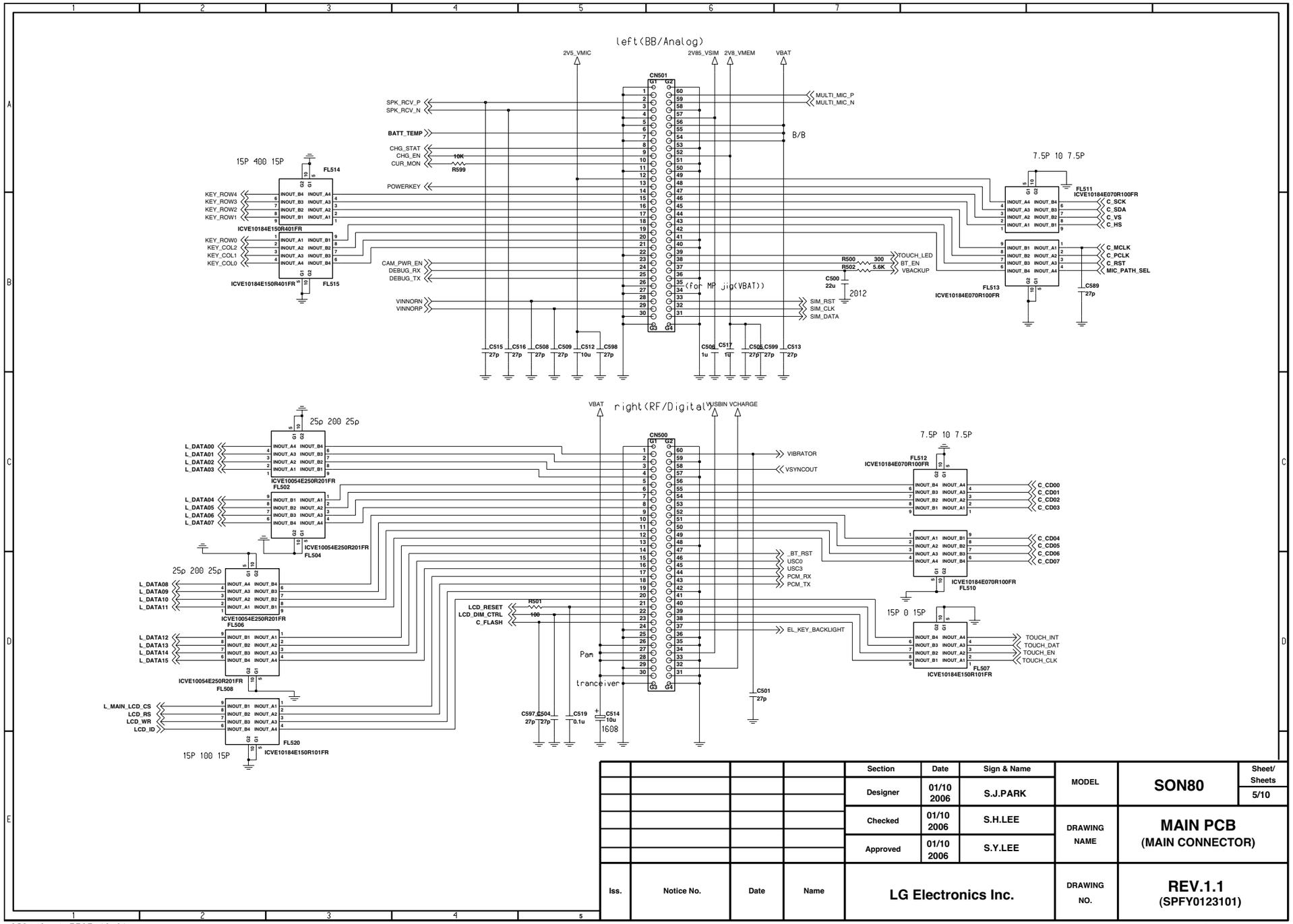


				Section	Date	Sign & Name	MODEL	SON80	Sheet/ Sheets
				Designer	01/10 2006	H.C.LIM			4/10
				Checked	01/10 2006	K.U.PARK	DRAWING NAME	MAIN PCB (RF)	
				Approved	01/10 2006	S.Y.LEE			
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.1 (SPFY0123101)	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM

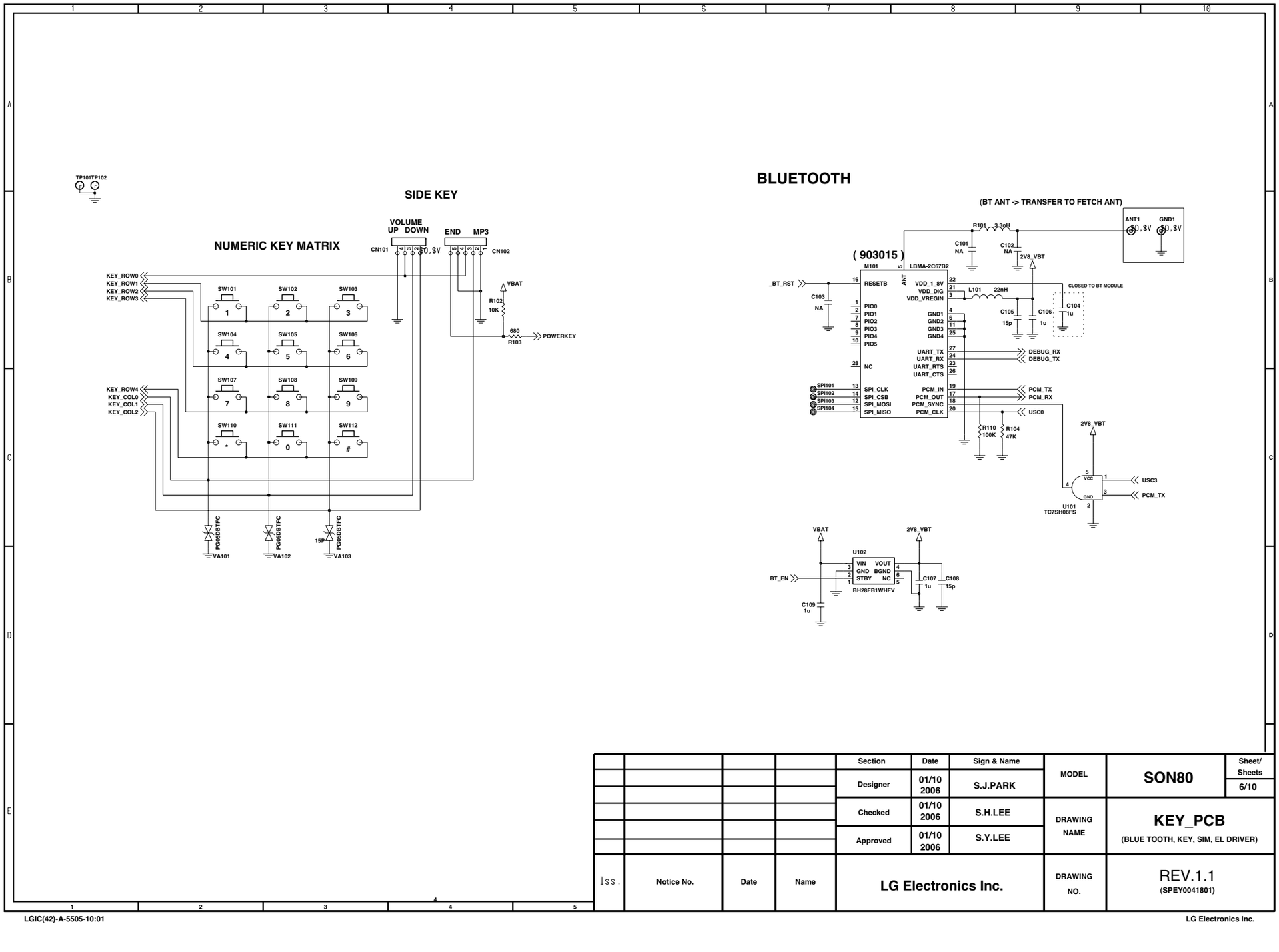


				Section	Date	Sign & Name	MODEL	SON80	Sheet/ Sheets
				Designer	01/10 2006	S.J.PARK			5/10
				Checked	01/10 2006	S.H.LEE	DRAWING NAME	MAIN PCB (MAIN CONNECTOR)	
				Approved	01/10 2006	S.Y.LEE			
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.1 (SPFY0123101)	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM



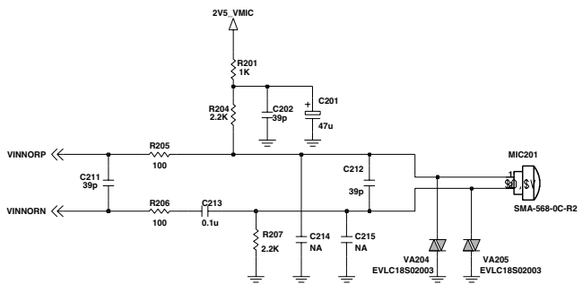
				Section	Date	Sign & Name	MODEL	SON80	Sheet/ Sheets
				Designer	01/10 2006	S.J.PARK			6/10
				Checked	01/10 2006	S.H.LEE	DRAWING NAME	KEY_PCB (BLUE TOOTH, KEY, SIM, EL DRIVER)	
				Approved	01/10 2006	S.Y.LEE			
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.1 (SPEY0041801)	

LGIC(42)-A-5505-10:01

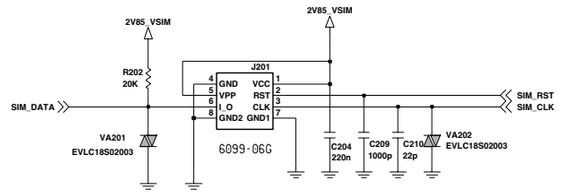
LG Electronics Inc.

7. CIRCUIT DIAGRAM

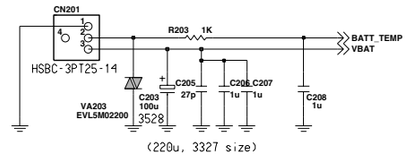
MAIN MIC



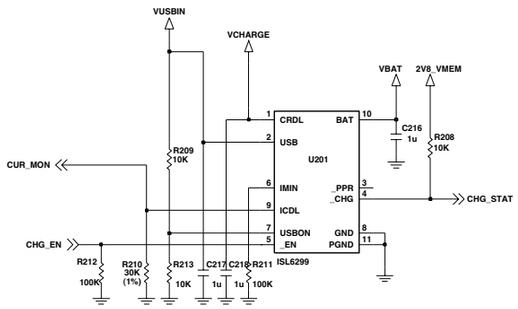
SIM CONNECTOR



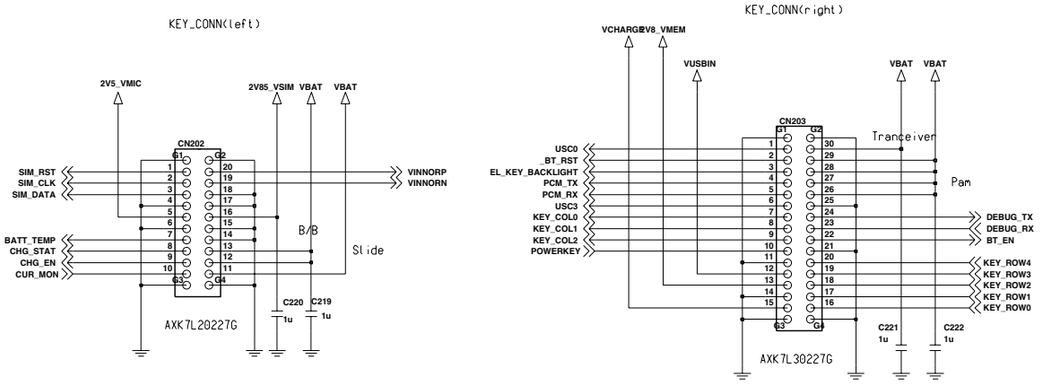
BAT CONNECTOR



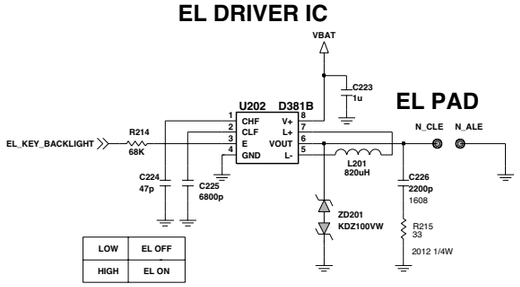
CHARGING IC



KEY PCB CONNECTOR



EL DRIVER IC

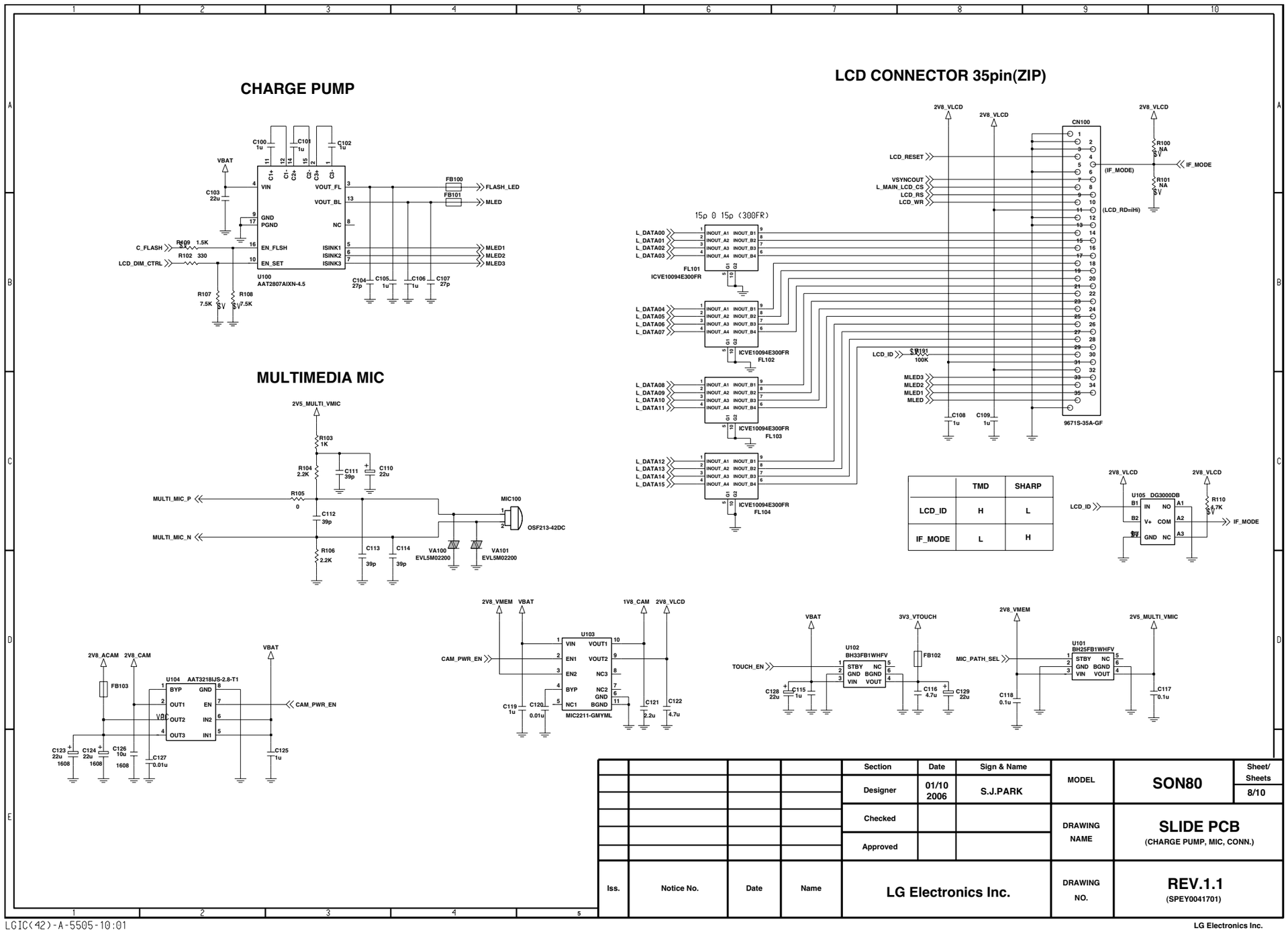


				Section	Date	Sign & Name	MODEL	SON80	Sheet/ Sheets
				Designer	01/10 2006	S.J.PARK			7/10
				Checked	01/10 2006	S.H.LEE	DRAWING NAME	KEY_PCB	
				Approved	01/10 2006	S.Y.LEE			
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.1 (SPEY0041801)	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM

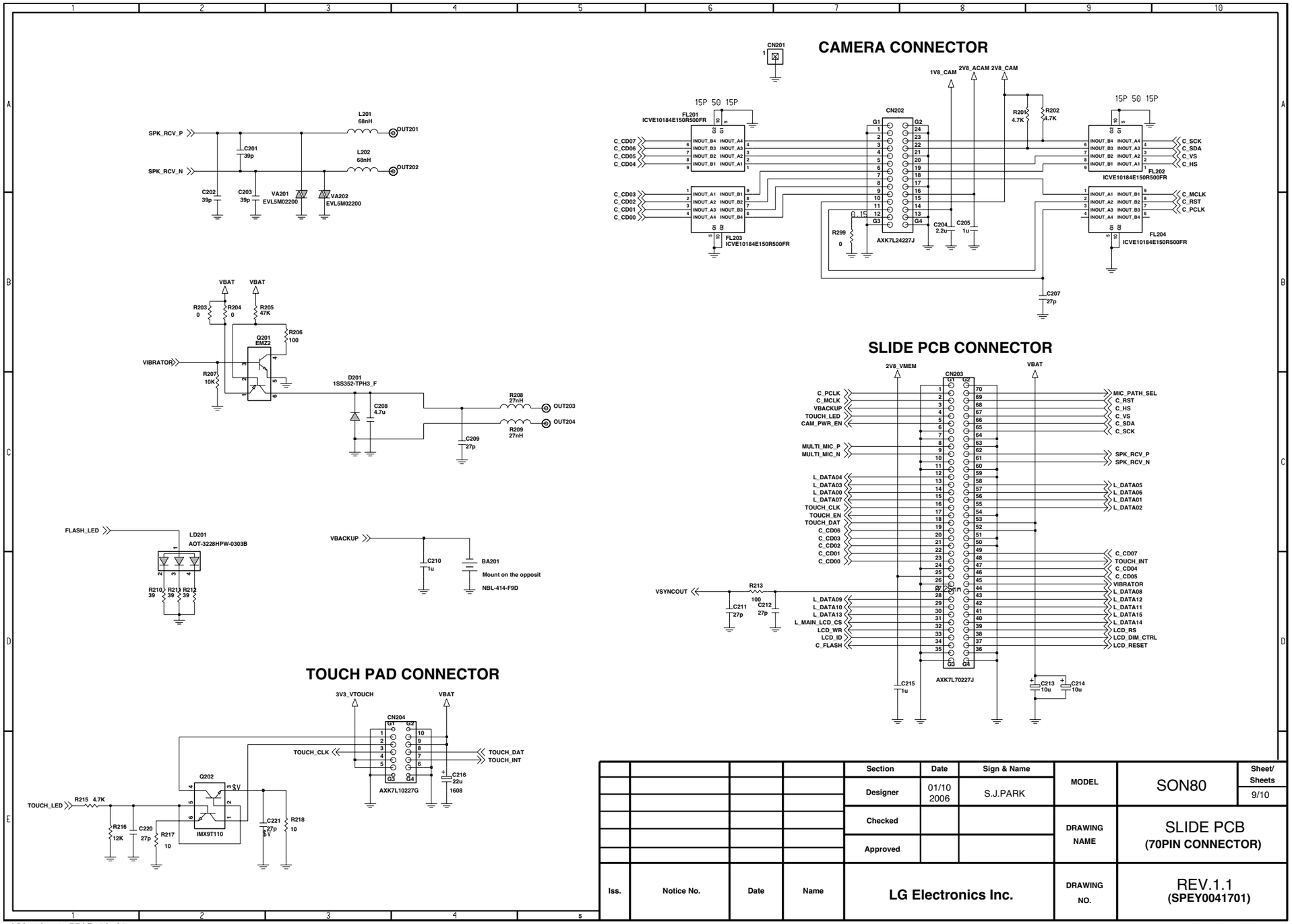


				Section	Date	Sign & Name	MODEL	SON80	Sheet/ Sheets
				Designer	01/10 2006	S.J.PARK			8/10
				Checked			DRAWING NAME	SLIDE PCB (CHARGE PUMP, MIC, CONN.)	
				Approved					
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.1 (SPEY0041701)	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM

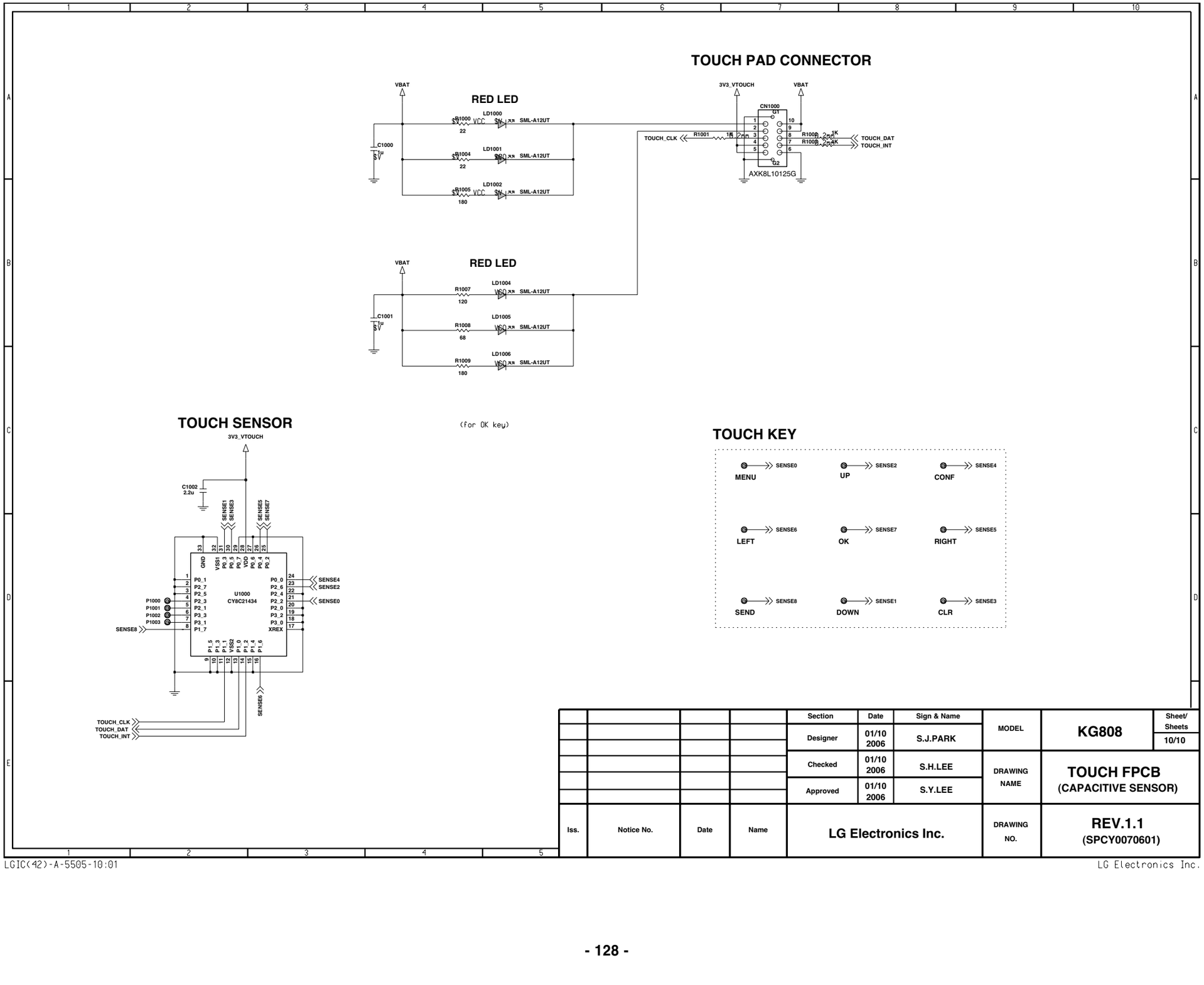


				Section	Date	Sign & Name	MODEL	SON80	Sheet/ Sheets
				Designer	01/10 2006	S.J.PARK			9/10
				Checked			DRAWING NAME	SLIDE PCB (70PIN CONNECTOR)	
				Approved					
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.1 (SPEY0041701)	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM

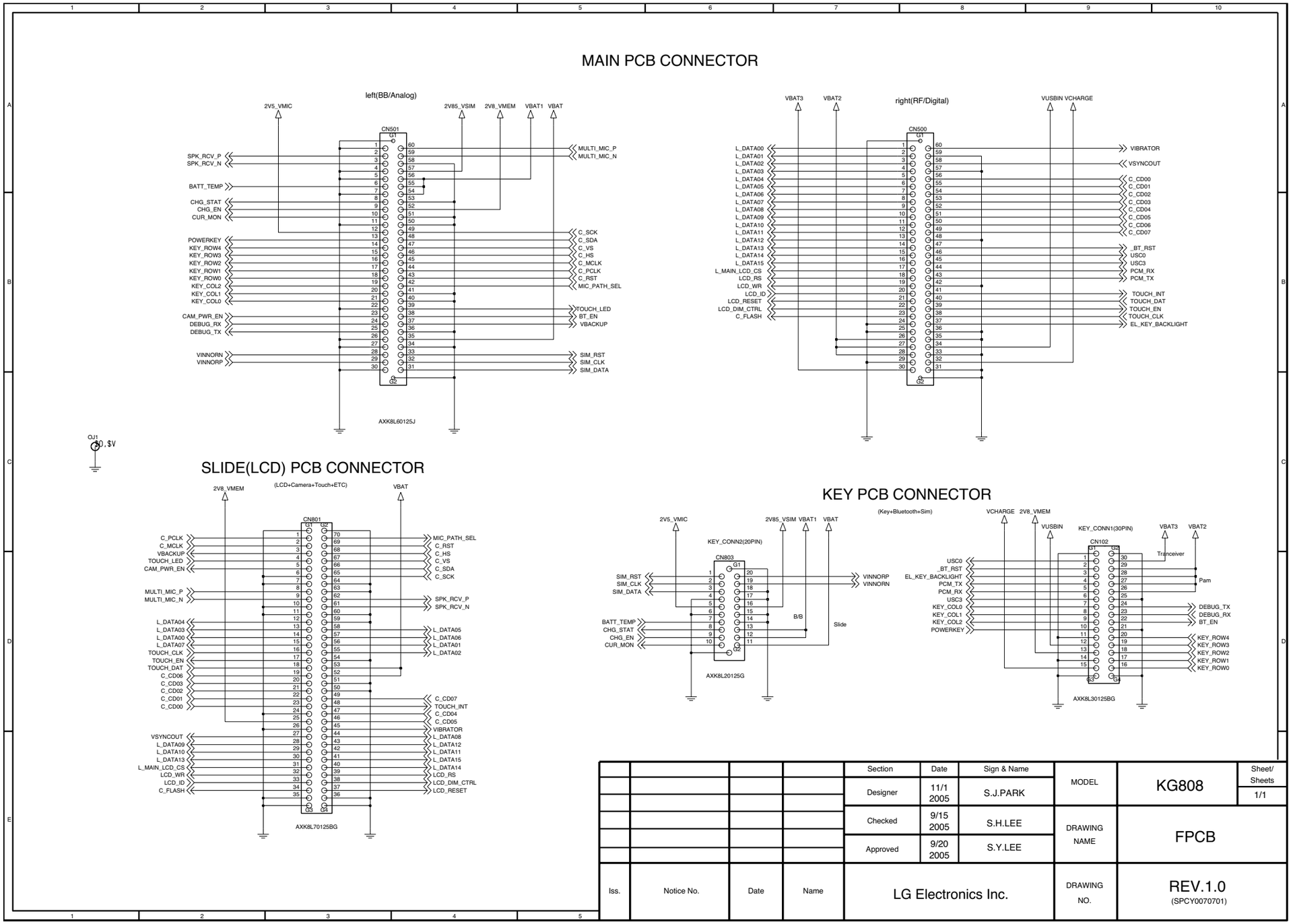


				Section	Date	Sign & Name	MODEL	KG808	Sheet/ Sheets
				Designer	01/10 2006	S.J.PARK			10/10
				Checked	01/10 2006	S.H.LEE	DRAWING NAME	TOUCH FPCB (CAPACITIVE SENSOR)	
				Approved	01/10 2006	S.Y.LEE			
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.1 (SPCY0070601)	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM

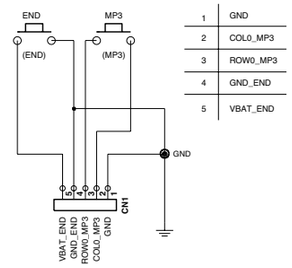


LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM

MP3_POWERKEY



1	GND
2	COL0_MP3
3	ROW0_MP3
4	GND_END
5	VBAT_END

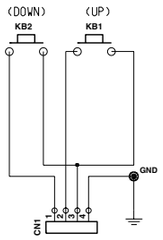
Iss.	Notice No.	Date	Name	Section	Date	Sign & Name	MODEL	KG808	Sheet/ Sheets
				Designer	2/20 2006	S.H.LEE			1/1
				Checked			DRAWING NAME	SIDEKEY_FPCB (MP3_END)	
				Approved					
				LG Electronics Inc.			DRAWING NO.	REV.1.0 (SPKY0033201)	

LGIC(42)-A-5505-10:01

LG Electronics Inc.

7. CIRCUIT DIAGRAM

VOLUME SIDEKREY



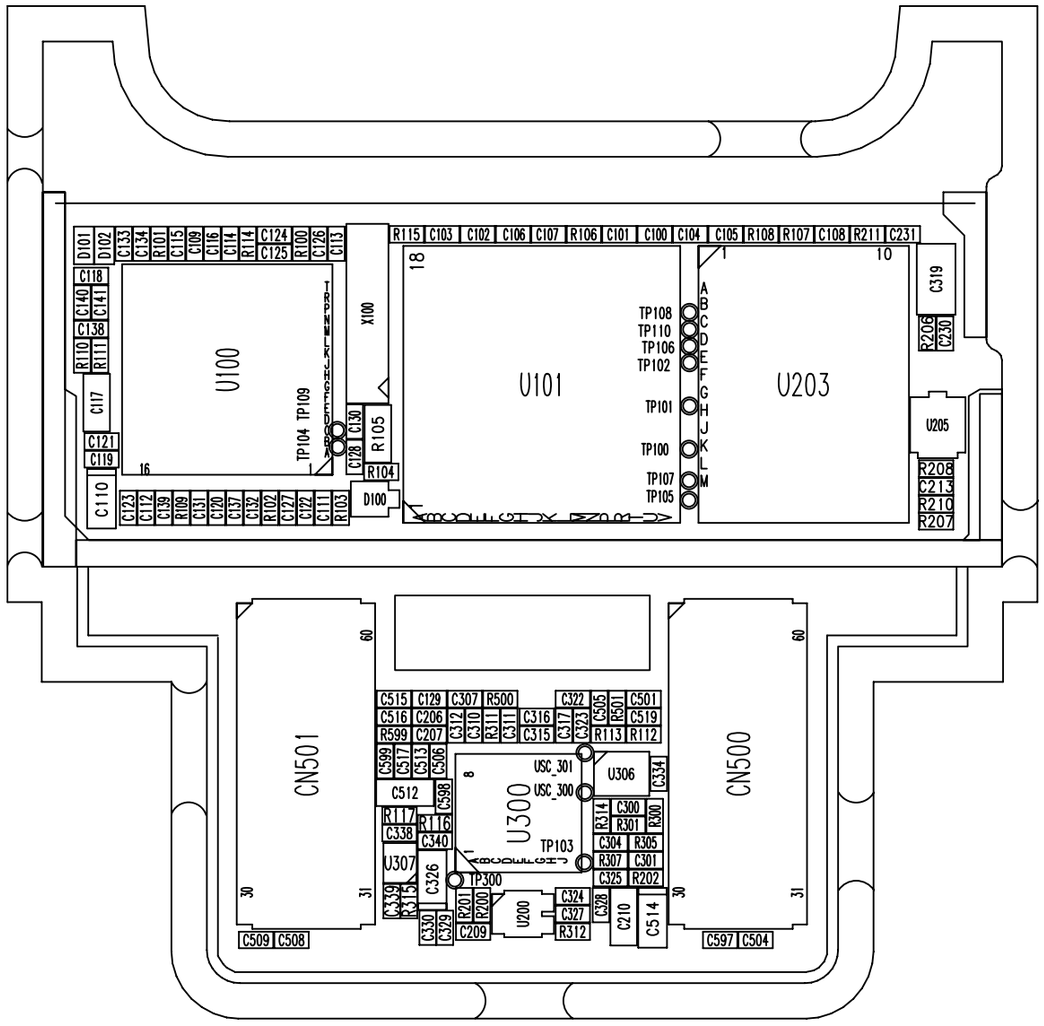
1	GND
2	ROW3_COMMON
3	COL1_UP
4	COL2_DOWN

				Section	Date	Sign & Name	MODEL	KG808	Sheet/ Sheets
				Designer	2/20 2006	S.H.LEE			1/1
				Checked			DRAWING NAME	SIDEKEY_FPCB (VOLUME)	
				Approved					
Iss.	Notice No.	Date	Name	LG Electronics Inc.			DRAWING NO.	REV.1.0 (SPKY0033101)	

LGIC(42)-A-5505-10:01

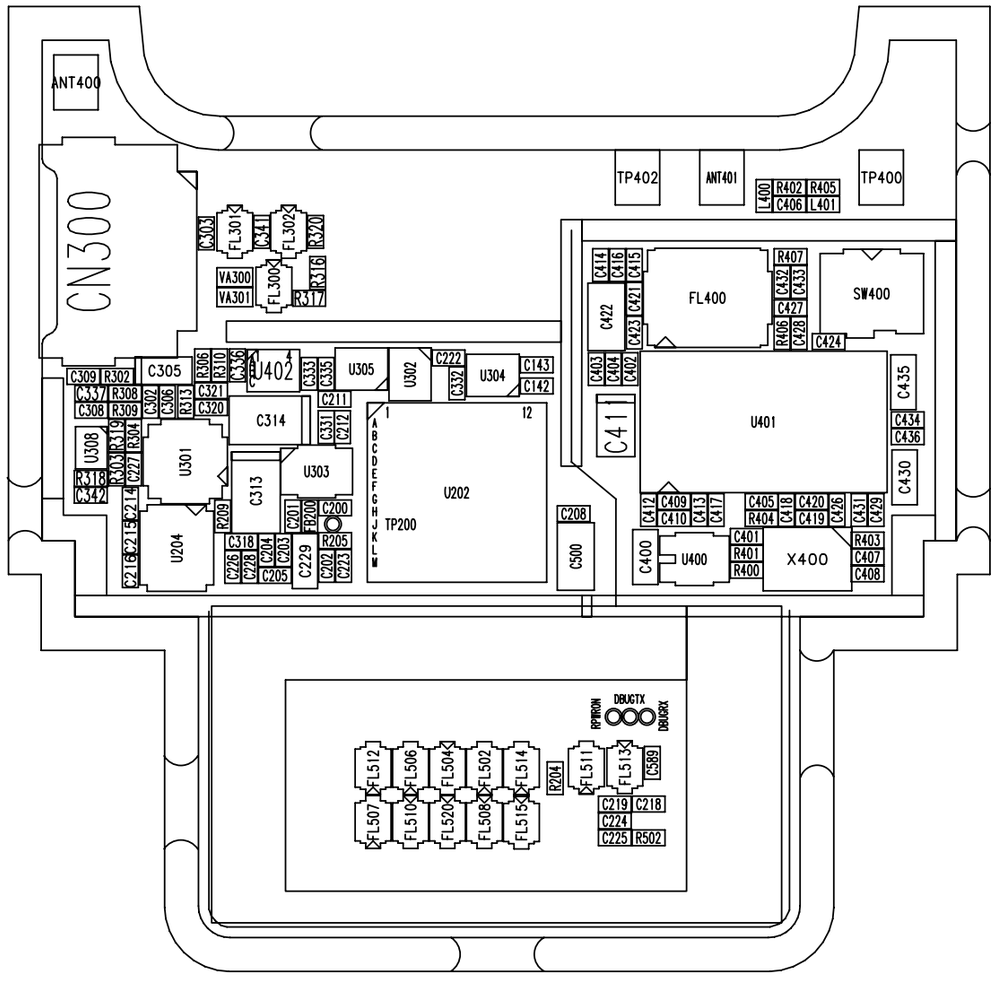
LG Electronics Inc.

8. PCB LAYOUT



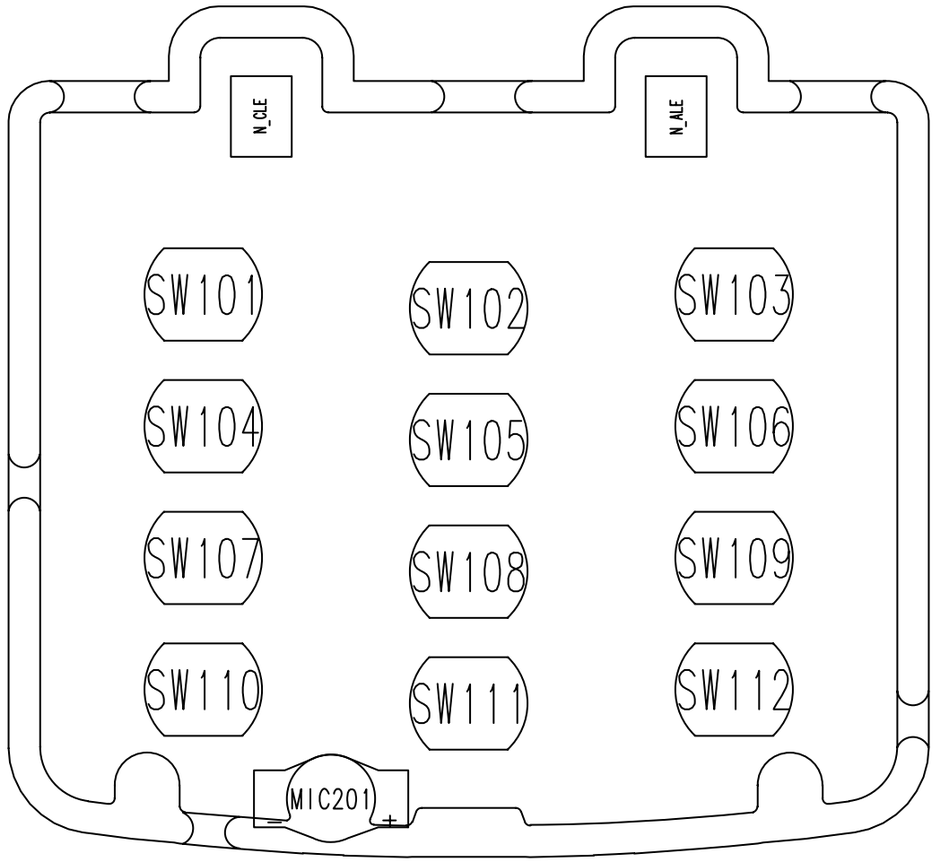
KG808-SPFY0123101-1.1-T0P

8. PCB LAYOUT



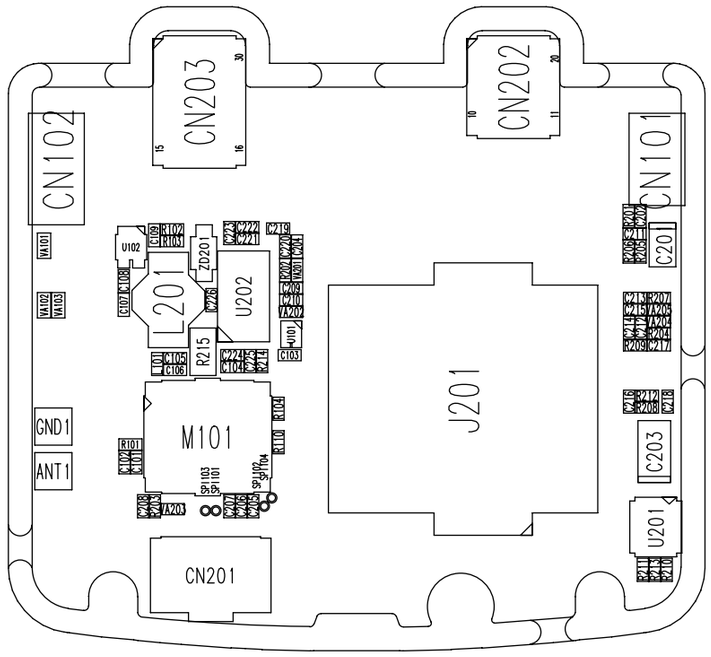
KG808-SPFY0123101-1.1-BTM

8. PCB LAYOUT



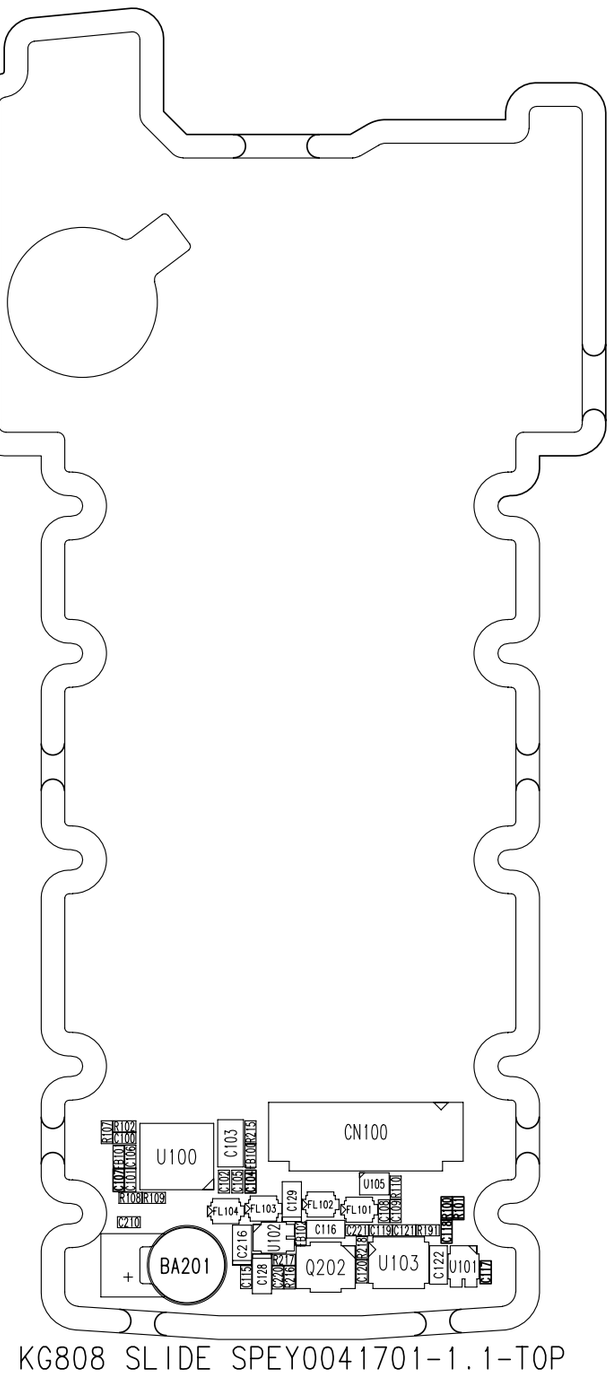
KG90/KG800/MG800c-KEY-1.1-TOP

8. PCB LAYOUT



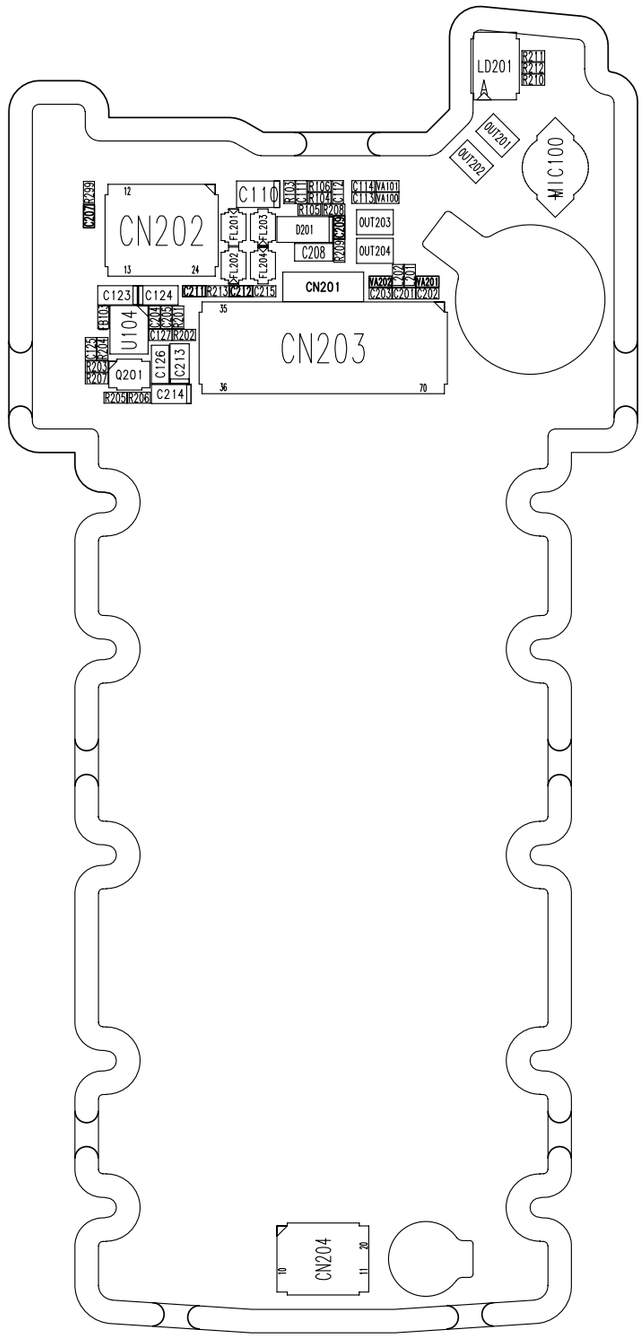
KG90/KG800/MG800c-KEY-1.1-BTM

8. PCB LAYOUT



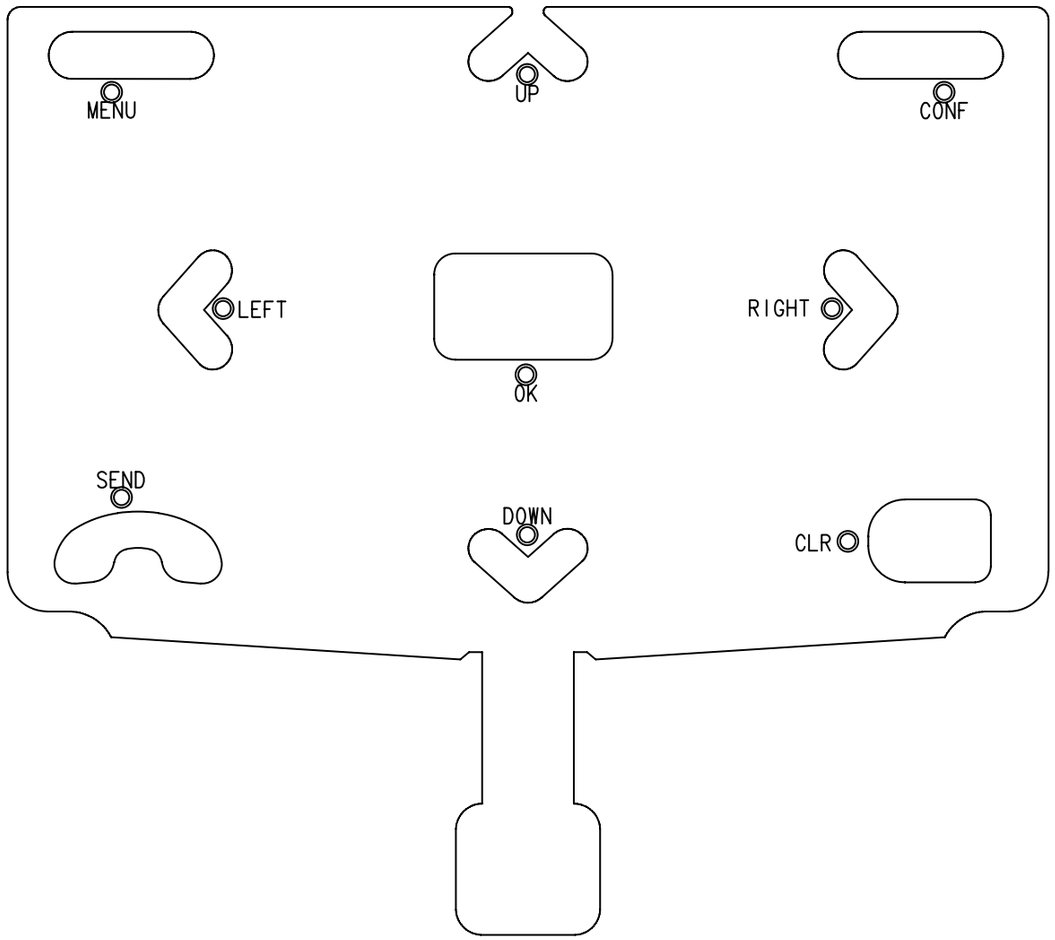
KG808 SLIDE SPEY0041701-1.1-TOP

8. PCB LAYOUT



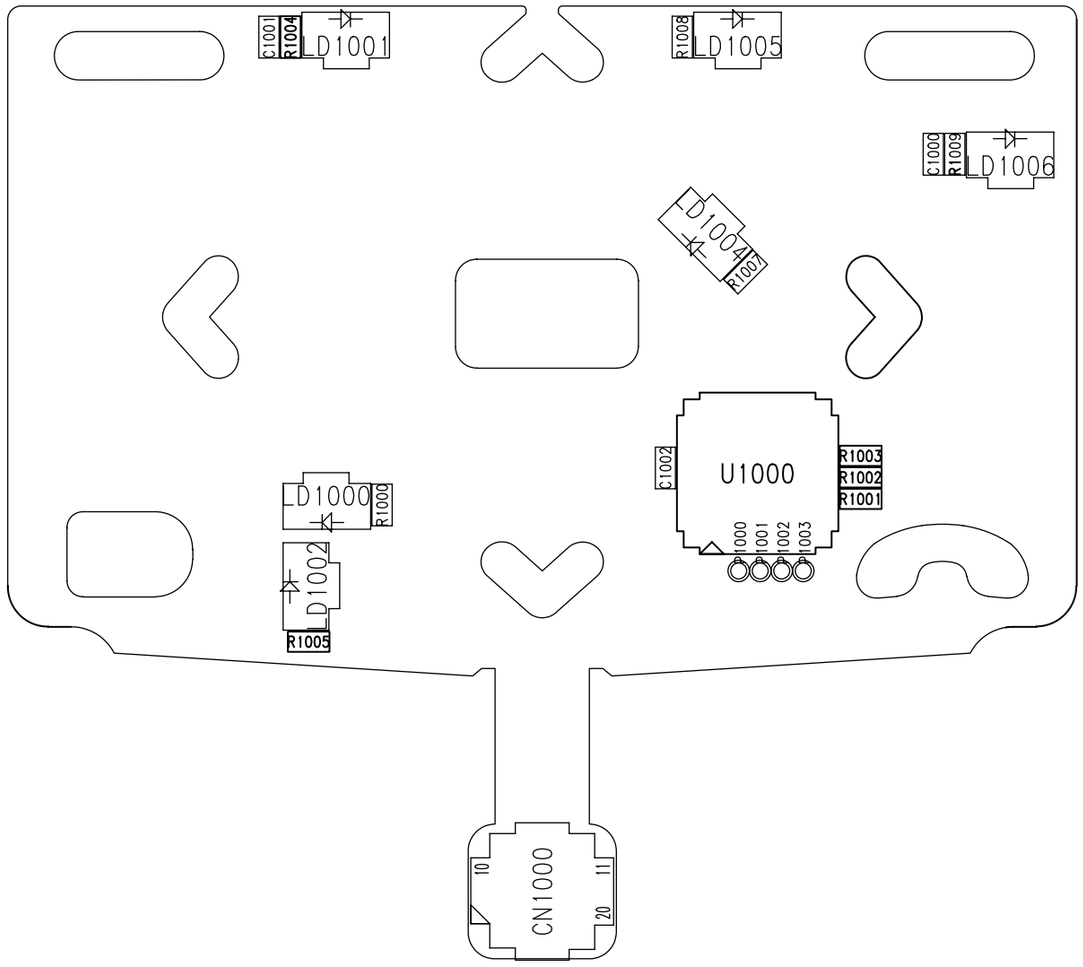
KG808 SLIDE SPEY0041701-1.1-BTM

8. PCB LAYOUT



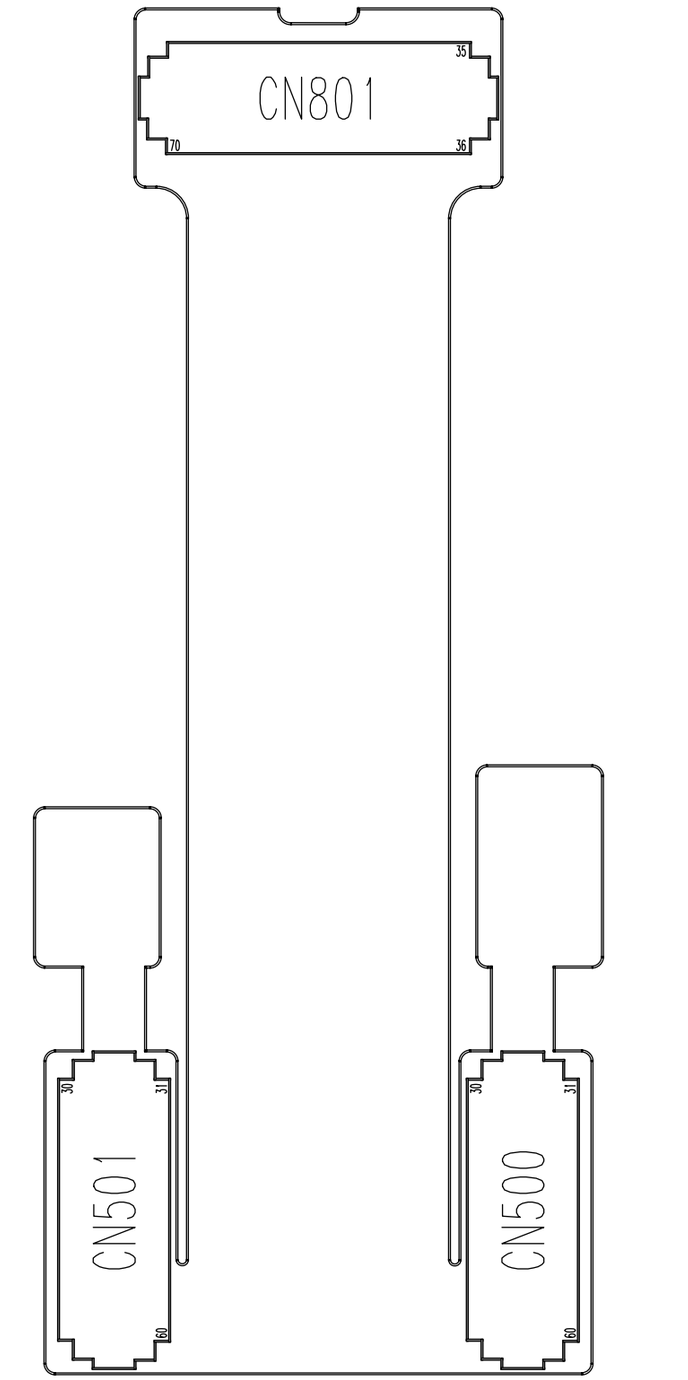
KG808-TOUCH-1.1-TOP

8. PCB LAYOUT



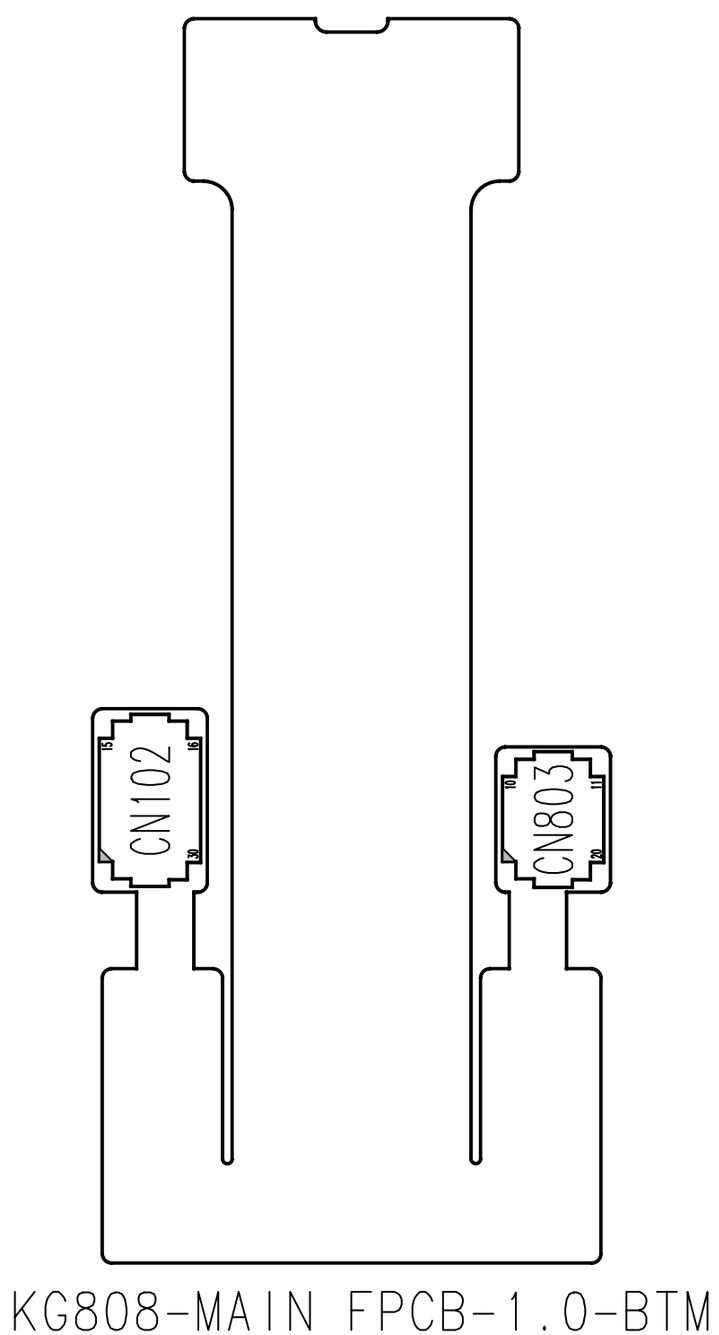
KG808-TOUCH-1.1-BTM

8. PCB LAYOUT



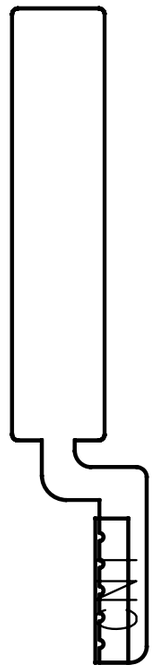
KG808-MAIN_FPCB-1.0-TOP

8. PCB LAYOUT



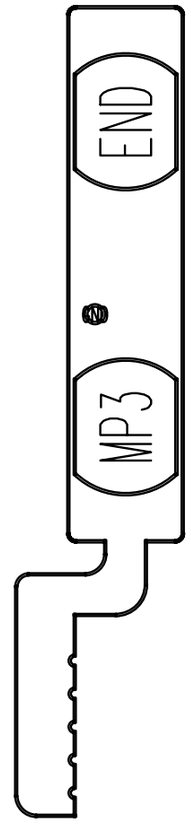
KG808-MAIN_FPCB-1.0-BTM

8. PCB LAYOUT



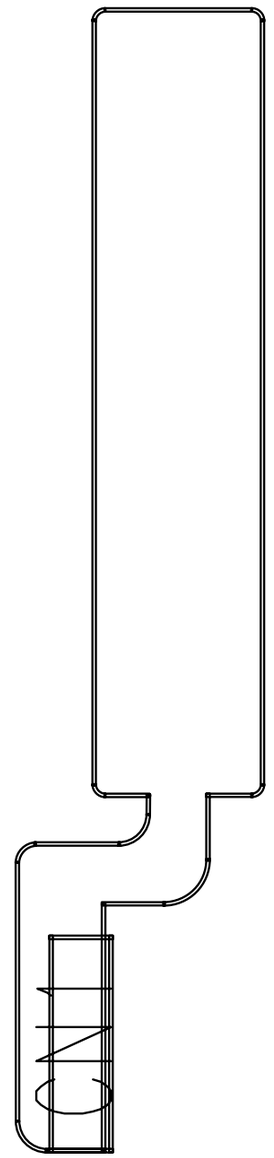
KG808-SPKY0033201-MP3-1.0-TOP

8. PCB LAYOUT



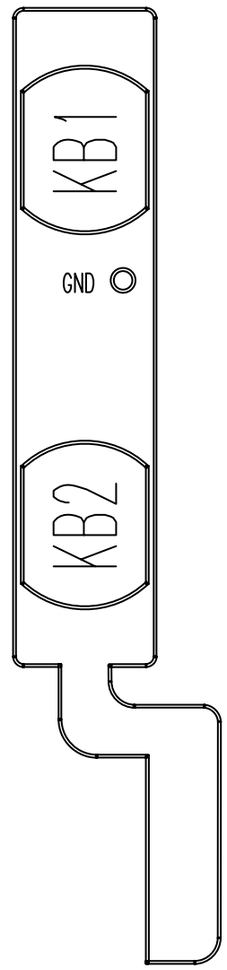
KG808-SPKY0033201-MP3-1.0-BTM

8. PCB LAYOUT



KG808-SPKY0033101-V0L-1.0-T0P

8. PCB LAYOUT



KG808-SPKY0033101-V0L-1.0-BTM

9. ENGINEERING MODE

A. About Engineering Mode

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

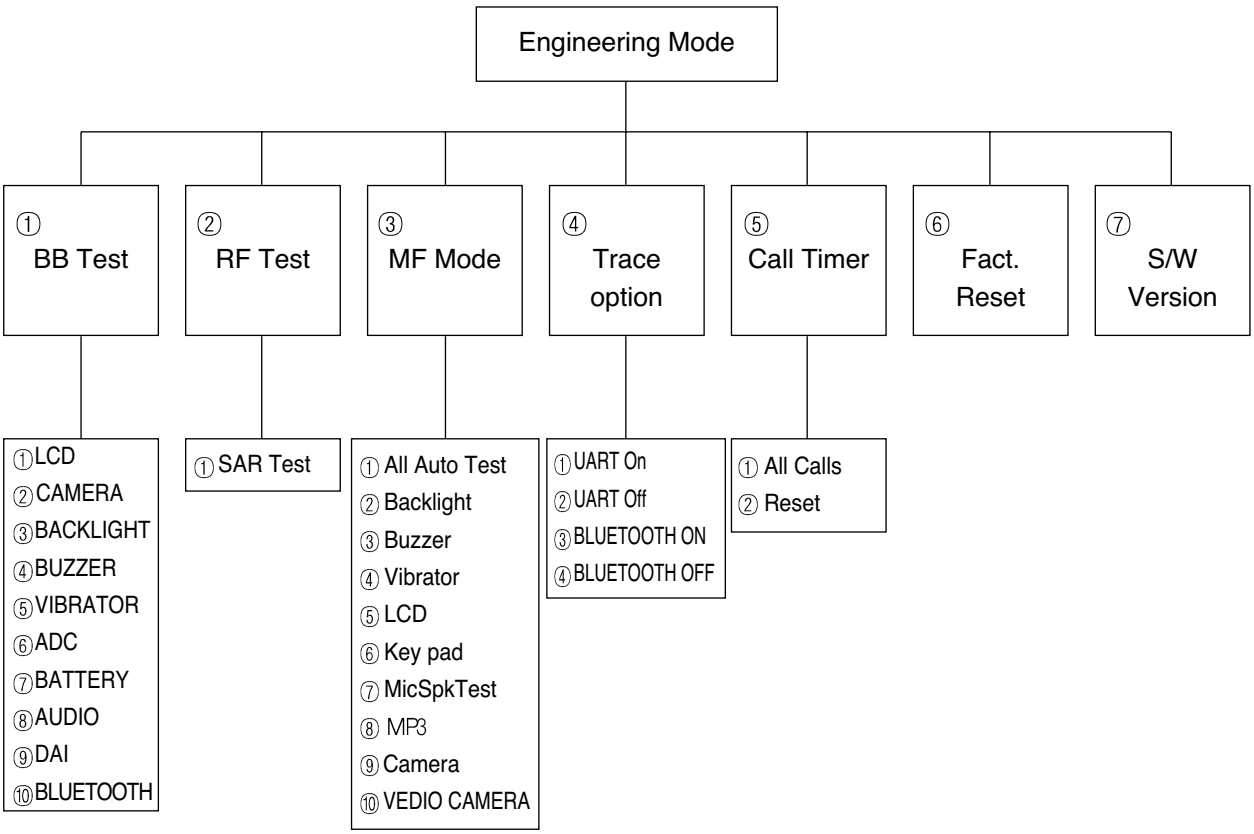
B. Access Codes

The key sequence for switching the engineering mode on is 2945#*#. Pressing END will switch back to non-engineering mode operation.

C. Key Operation

Use Up and Down key to select a menu and press ‘select’ key to progress the test. Pressing ‘back’ key will switch back to the original test menu.

D. Engineering Mode Menu Tree



9.1 BB Test [MENU 1]

9.1.1 LCD

1) COLOUR : WHITE, RED, GREEN, BLUE, BLACK

9.1.2 CAMERA

This menu is to test the Camera.
1) Main LCD preview : It shows the picture on Main LCD.
2) Sub LCD preview : It shows the picture on Sub LCD.
3) Flash on : It turns on the Flash LED.
4) Flash off : It turns off the Flash LED.

9.1.3 Backlight

This menu is to test the LCD Backlight and Keypad EL Backlight.
1) Backlight on : LCD Backlight and Keypad EL Backlight light on at the same time.
2) Backlight off : LCD Backlight and Keypad EL Backlight light off at the same time.
3) Backlight value : This controls brightness of Backlight. When entering into the menu, the present backlight-value in the phone is displayed. Use Left/Right key to adjust the level of brightness. The value of the brightness set at last will be saved in the NVRAM.

9.1.4 Buzzer

This menu is to test the melody sound.
1) Melody on : Melody sound is played through the speaker.
2) Melody off : Melody sound is off.

9.1.5 Vibrator

This menu is to test the vibration mode.
1) Vibrator on : Vibration mode is on.
2) Vibrator off : Vibration mode is off.

9.1.6 ADC (Analog to Digital Converter)

This displays the value of each ADC.
1) MVBAT ADC : Main Voltage Battery ADC
2) AUX ADC : Auxiliary ADC
3) TEMPER ADC : Temperature ADC

9.1.7 BATTERY

1) Bat Cal : This displays the value of Battery Calibration. The following menus are displayed in order : BAT_LEV_4V, BAT_LEV_3_LIMIT, BAT_LEV_2_LIMIT, BAT_LEV_1_LIMIT, BAT_IDLE_LI MIT, BAT_INCALL_LIMIT, SHUT_DOWN_VOLTAGE, BAT_RECHARGE_LMT
2) TEMP Cal : This displays the value of Temperature Calibration. The following menus are displayed in order : TEMP_HIGH_LIMIT, TEMP_HIGH_RECHARGE_LMT, TEMP_LOW_RECHARGE_LMT, TEMP_LOW_LIMIT

9.1.8 Audio

This is a menu for setting the control register of Voiceband Baseband Codec chip.
Although the actual value can be written over, it returns to default value after switching off and on the phone.
1) VbControl1 : VbControl1 bit Register Value Setting
2) VbControl2 : VbControl2 bit Register Value Setting
3) VbControl3 : VbControl3 bit Register Value Setting
4) VbControl4 : VbControl4 bit Register Value Setting
5) VbControl5 : VbControl5 bit Register Value Setting
6) VbControl6 : VbControl6 bit Register Value Setting

9.1.9 DAI (Digital Audio Interface)

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.
1) DAI AUDIO : DAI audio mode
2) DAI UPLINK : Speech encoder test
3) DAI DOWNLINK : Speech decoder test
4) DAI OFF : DAI mode off

9.1.9 Bluetooth

This menu is to test Bluetooth.
1) Enter test mode
2) Bypass mode On
3) Bypass mode Off

9.2 RF Test [MENU 2]

9.2.1 SAR test

This menu is to test the Specific Absorption Rate.
1) SAR test on : Phone continuously process TX only. Call-setup equipment is not required.
2) SAR test off : TX process off

9.3 MF mode [MENU 3]

This manufacturing mode is designed to do the baseband test automatically. Selecting this menu will process the test automatically, and phone displays the previous menu after completing the test.

9.3.1 All auto test

LCD, Backlight, Vibrator, Buzzer, Key Pad, Mic&Speaker, Camera, Video camera

9.3.2 Backlight

LCD Backlight is on for about 1.5 seconds at the same time, then off.

9.3.3 Buzzer

This menu is to test the volume of Melody. It rings in the following sequence. Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

9.3.4 Vibrator

Vibrator is on for about 1.5 seconds.

9.3.5 LCD

1)LCD
Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

9.3.6 Key pad

When a pop-up message shows ‘Press Any Key’, you may press any keys including side keys, but not [Soft2 Key]. If the key is working properly, name of the key is displayed on the screen. Test will be completed in 15 seconds automatically.

9.3.7 MicSpk Test

The sound from MIC is recorded for about 3 seconds, then it is replayed on the speaker automatically.

9.4 Trace option [MENU 4]

This is NOT a necessary menu to be used by neither engineers nor users.

9.5 Call timer [MENU 5]

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.
1) All calls : This displays total conversation time. User cannot reset this value.
2) Reset settings : This resets total conversation time to this, [00:00:00].
3) DAI DOWNLINK : Speech decoder test
4) DAI OFF : DAI mode off

9.6 Fact. Reset [MENU 6]

This Factory Reset menu is to format data block in the flash memory and this procedure set up the default value in data block.

Attention
① Fact. Reset (i.e.Factory Reset) should be only used during the Manufacturing process.
② Servicemen should NOT progress this menu, otherwise some of valuable data such as Setting value, RF Calibration data, etc. cannot be restored again.

9.7 S/W version

This displays software version stored in the phone.

10. STAND ALONE TEST

10.1 Introduction

This manual explains how to examine the status of RX and TX of the model.

A. Tx Test

TX test - this is to see if the transmitter of the phones is activating normally.

B. Rx Test

RX test - this is to see if the receiver of the phones is activating normally.

10.2 Setting Method

A. COM port

a. Move your mouse on the “Connect” button, then click the right button of the mouse and select “Com setting”.
b. In the “Dialog Menu”, select the values as explained below.
- Port : select a correct COM port
- Baud rate : 38400
- Leave the rest as default values

B. Tx

1. Selecting Channel
- Select one of GSM or DCS Band and input appropriate channel.

2. Selecting APC
a. Select either Power level or Scaling Factor.
b. Power level
- Input appropriate value GSM (between 5~19) or DCS (between 0~15)

c. Scaling Factor
- A ‘Ramp Factor’ appears on the screen.
- You may adjust the shape of the Ramp or directly input the values.

C. Rx

1. Selecting Channel
- Select one of GSM or DCS Band and input appropriate channel.

2. Gain Control Index (0~ 26) and RSSI level
- See if the value of RSSI is close to -16dBm when setting the value between 0 ~ 26 in Gain Control Index.
- Normal phone should indicate the value of RSSI close to -16dBm.

10.3 Means of Test

a. Select a COM port
b. Set the values in Tx or Rx
c. Select band and channel
d. After setting them all above, press connect button.
e. Press the start button

Figure 10-1. HW test program

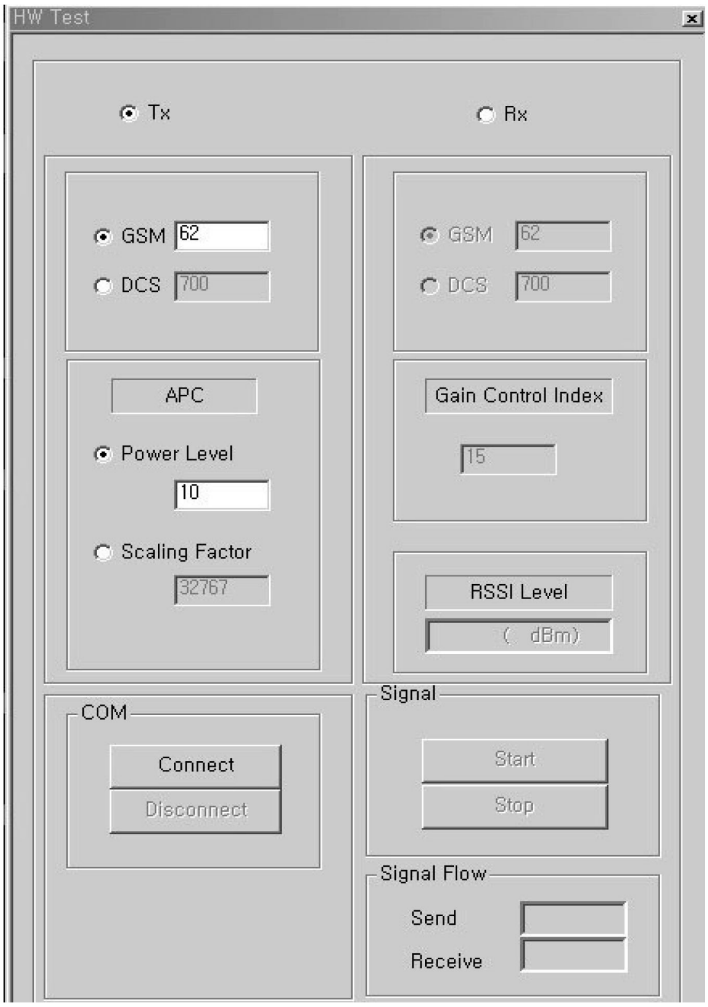


Figure 10-2. HW test setting

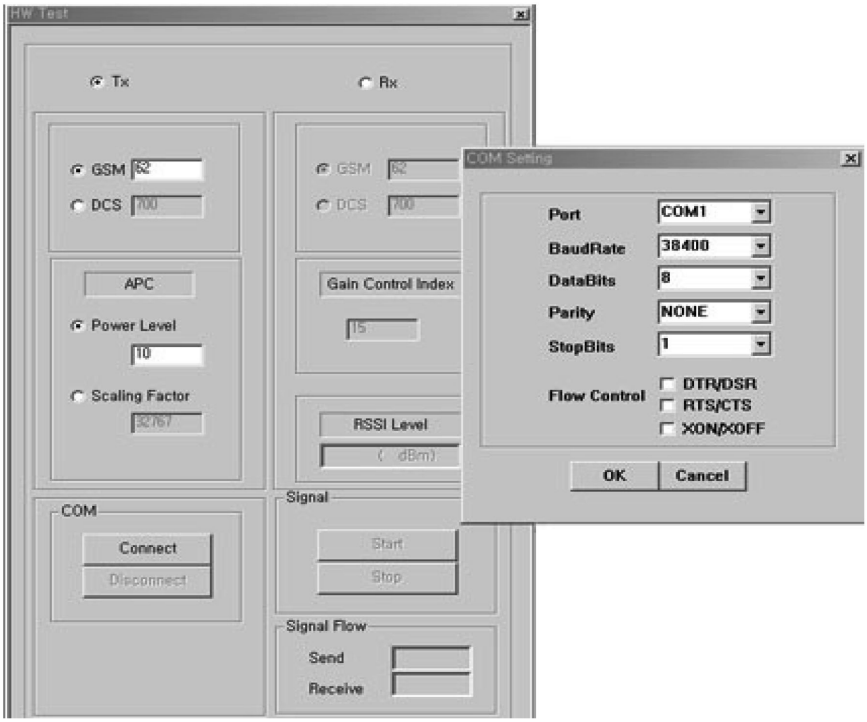
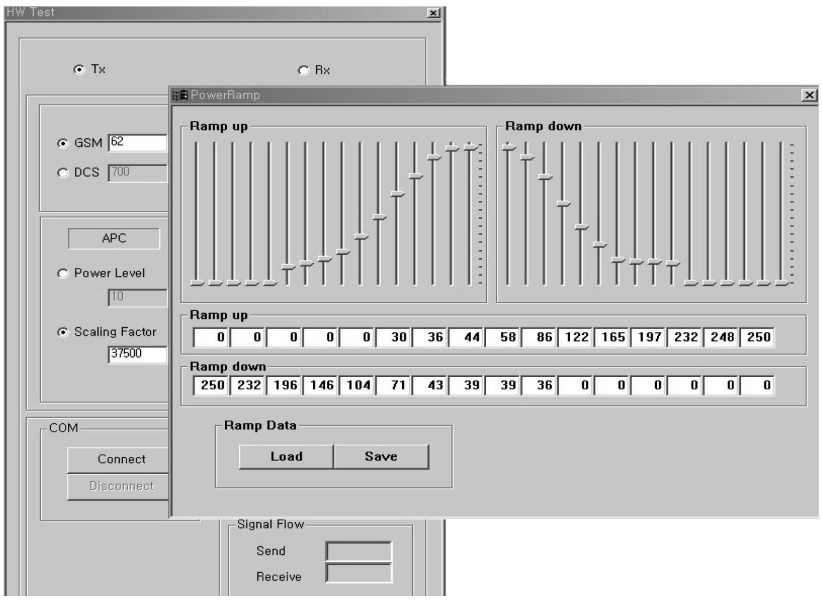
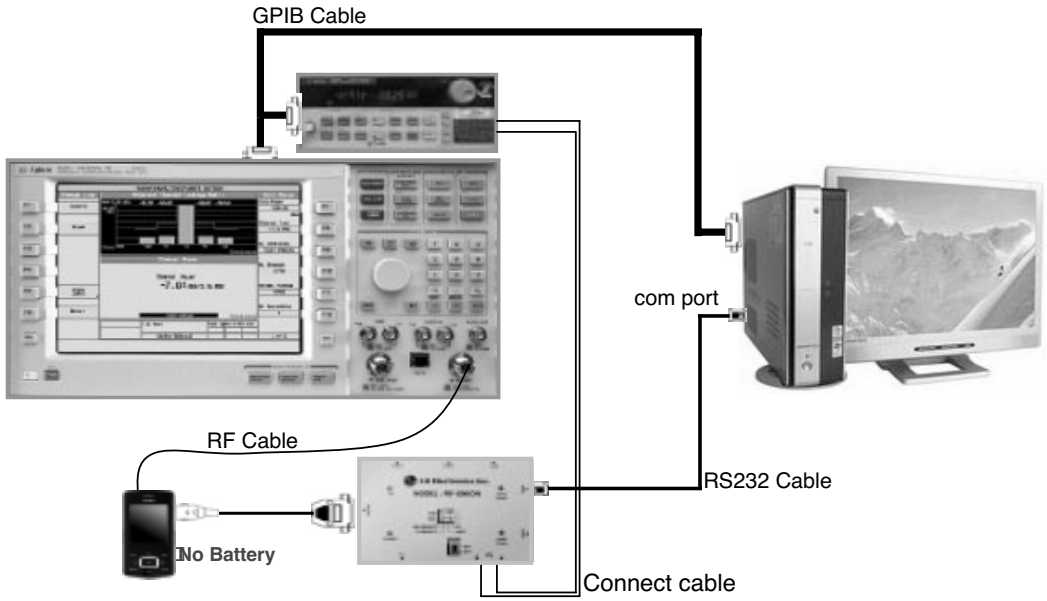


Figure 10-3. Ramping profile



11. Calibration

1.H/W Tool Setup



2.H/W Tool Setup(RF test : 8960)

Tool List	Option	Reference
RF test set	8960/ Agilent	Address 1
Power Supply	66311B/Agilent	Address 2
PC	Only Windolw2000 or WinXP	English Version
PIF Jig	Dip sw mode "ADI"	
GPIB card & Install SW		
GPIB Cable		
RS 232 Cable		
RF Cable	RF500	
I/O Cable	EDGE Cable + Connect zender	
Connect cable		

11. Calibration

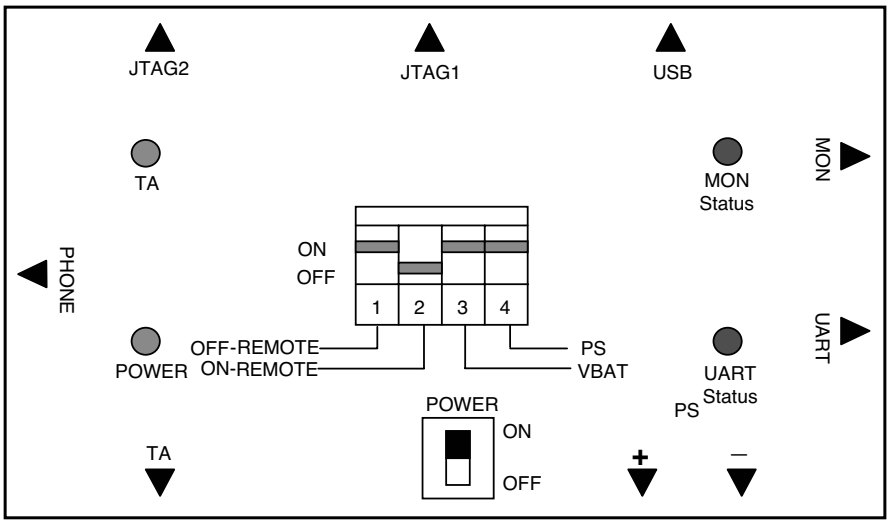


Figure 11-1 The top view of Test JIG

1. Test Jig Operation

Table 11-2 Jig Power

Power Source	Description
Power Supply	usually 4.0V
Travel Adaptor	Use TA, name is TA-20G(24pin)

Table 11-3 Jig DIP Switch

Switch Number	Name	Description
Switch 1	ADI-REMOTE	In ON state, phone is awaked. It is used ADI chipset.
Switch 2	TI-REMOTE	In ON state, phone is awaked. It is used TI chipset.
Switch 3	VBAT	Power is provided for phone from battery
Switch 4	PS	Power is provided for phone from Power supply

Table 11-4 LED Description

LED Number	Name	Description
LED 1	Power	Power is provided for Test Jig
LED 2	TA	Indicate charging state of the phone battery
LED 3	UART	Indicate data transfer state through the UART port
LED 4	MON	Indicate data transfer state through the MON port

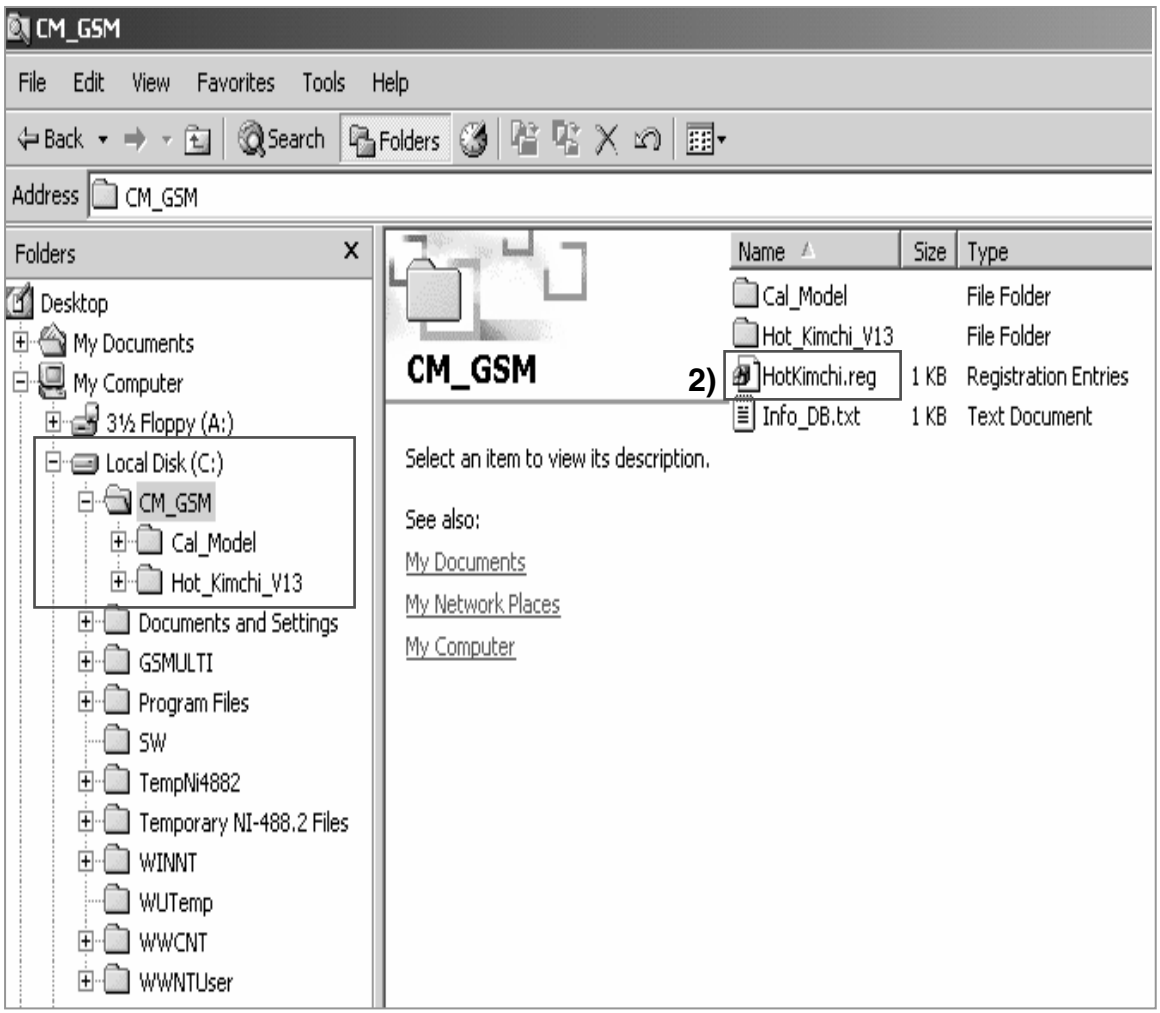
1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3rd, 4th of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1st ON state

2. Install & Directory structure

1) Copy a Cal. Program in local Disk(C:). This program name is “Hotkimchi”
   -Folder name : Only “CM_GSM”
   -This Cal.Program is on GCSC Website

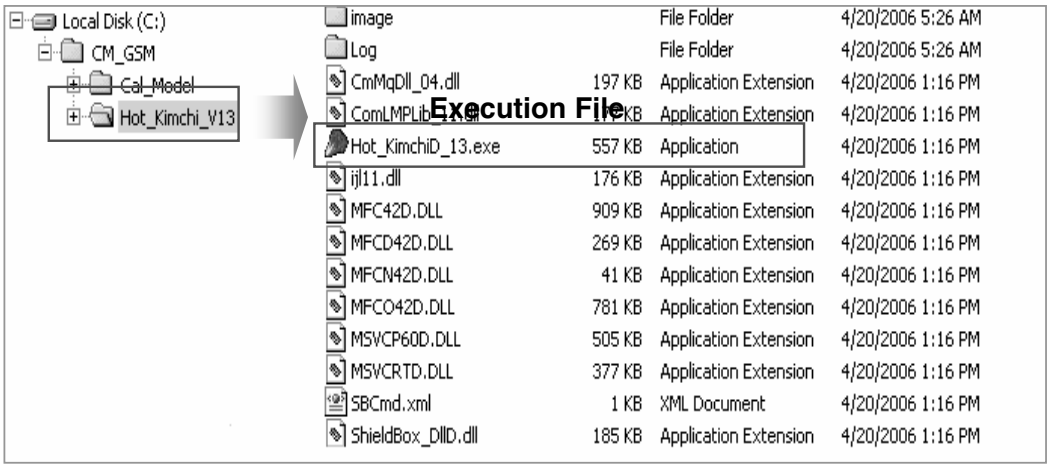
2) Registry of Calibration Program
   -Execute by double click : HotKimchi.reg

3) Directory structure

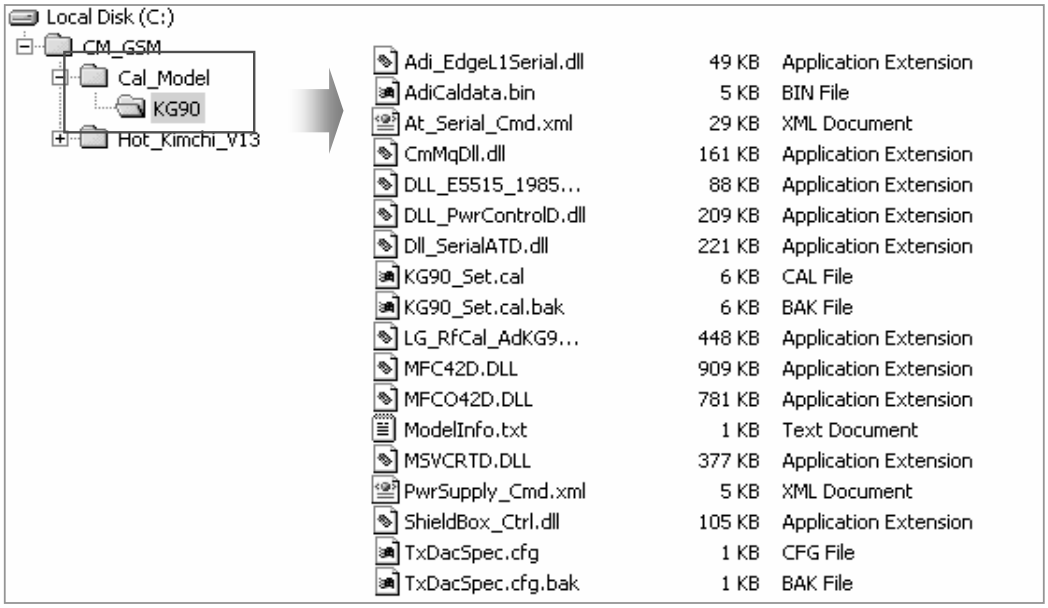


3.Others Directory structure of CM_GSM

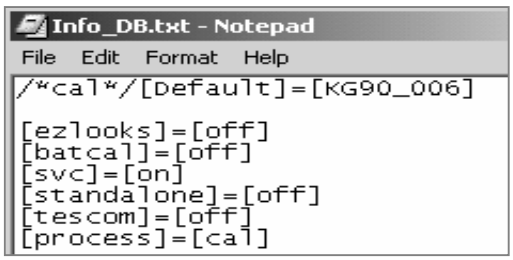
1)Hot_Kimchi_V13



2)Cal_Model & KG90 Folder



3)Info_Db.txt



11. Calibration

3.Cal. Procedure

1) Execute. Hot_KimchiD_13.exe

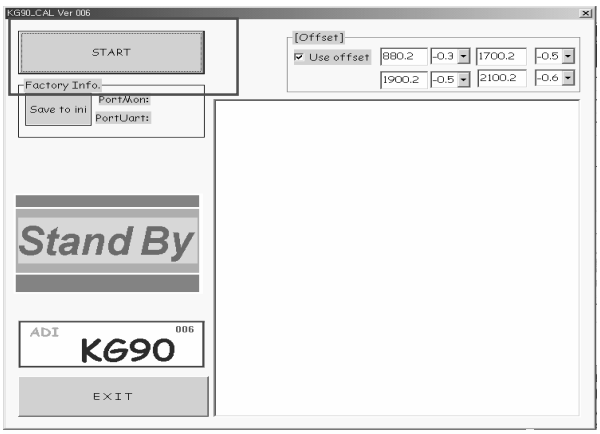
-Path : Local(C:) → CM_GSM Folder → Hot_Kimchi_V13 → Hot_KimchiD_13.exe

① **Click. And choose "KG90"**

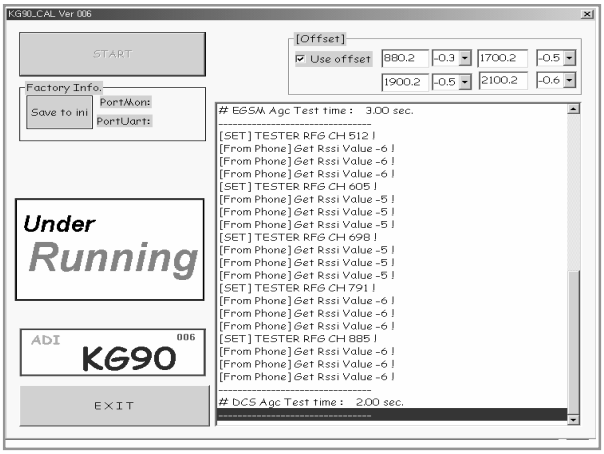
② **Click.**

③ **Click.**

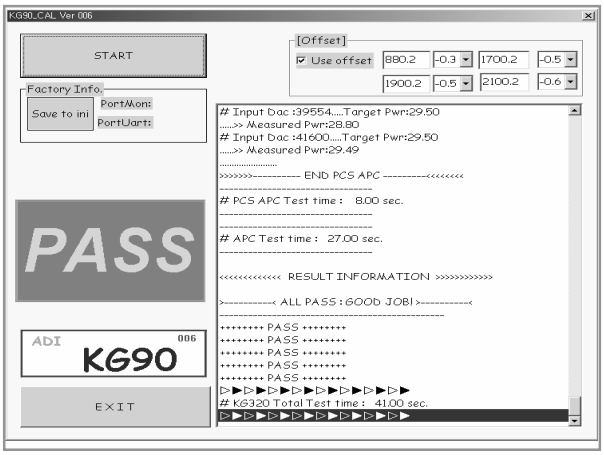
4.Cal. sequence



When the left window pop-up,
first of all turn on the phone.
And then click ìStartî button after finishing turn on



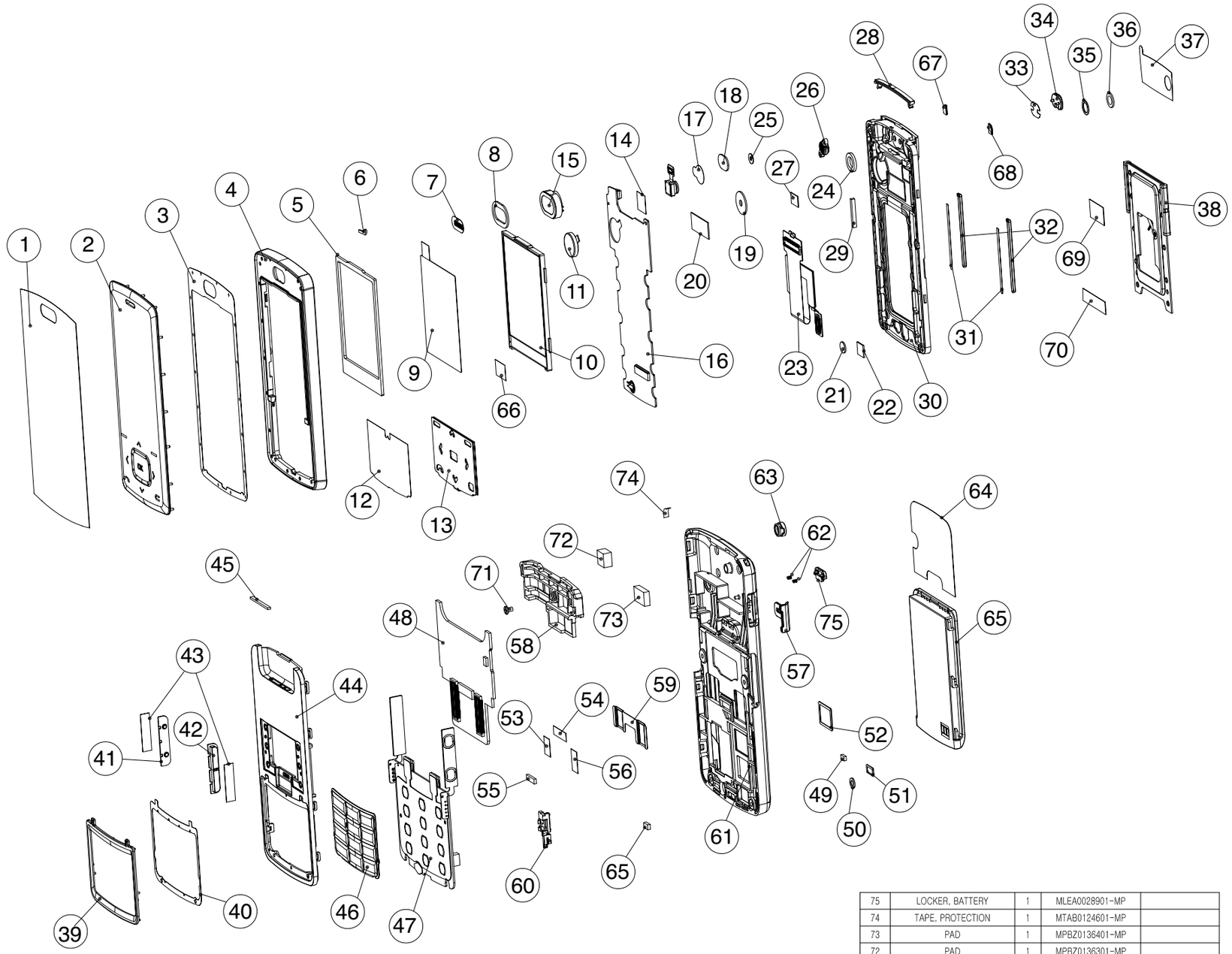
The left window is just progress screen.



Phone is being auto re-start after finishing cal.

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW



60	ANTENNA(Bluetooth)	1	SNGF0012001-MP	
59	PLATE(KEY_CNT_SUPPORT)	1	MPFZ0023201-MP	
58	INTENNA	1	SNGF0014201-MP	
57	CAP,RECEPTACLE	1	MCCE0026401-MP	
56	GASKET,SHIELD FORM	1	MGAD0104505-MP	
55	GASKET,SHIELD FORM	1	MGAD0104506-MP	
54	TAPE	1	MTAZ0106707-MP	
53	GASKET,SHIELD FORM	1	MGAD0104504-MP	
52	PANEL,REAR	1	MPED0002401-MP	
51	PANEL,REAR	1	MPED0002402-MP	
50	PAD,MIKE (REAR)	1	MPBH0020801-MP	
49	GASKET,SHIELD FORM	1	MGAD0104507-MP	
48	PCB, MAIN	1	--	
47	MAIN KEY METAL ASSY	1	SAEY0048601-MP	
46	BUTTON,DIAL	1	MBJA0020403-MP	
45	PAD	1	MPBZ0132601-MP	
44	COVER,FRONT	1	MCJK0054501-MP	
43	TAPE(SIDE BUTTON)	2	MTAZ0106711-MP	
42	BUTTON, FUNCTION	1	MBJC0018902-MP	
41	BUTTON,VOLUME	1	MBJN0007701-MP	
40	TAPE(FRONT SUPPORT)	1	MTAZ0106706-MP	
39	SUPPORT(COVER,FRONT)	1	MSHY0010001-MP	
38	HINGE ASSY	1	MRAY0003501-MP	
37	CAM_WINDOW_PROTECT	1	MTAB0107001-MP	
36	WINDOW,CAMERA	1	MWAE0014801-MP	
35	TAPE(CAMERA WINDOW)	1	MTAZ0106703-MP	
34	DECO,CAMERA	1	MDAD0019401-MP	
33	TAPE (CAMERA_DECO)	1	MTAZ0106704-MP	
32	SUPPORT(LOWER)	2	MSHY0009401-MP	
31	TAPE(SUPPORT)	2	MTAZ0106705-MP	
30	COVER,SLIDE(LOWER)	1	MCJV0005901-MP	
29	MAGNET,SWITCH	1	MMAA0005201-MP	
28	DECO (FOLDER LOWER)	1	MDAY0024501-MP	
27	PAD(CAMERA_CNT)	1	MPBZ0113701-MP	
26	WINDOW,FLASH	1	MWAH0004401-MP	
25	PAD,MIKE	1	MPBH0010901-MP	
24	PAD, CAMERA	1	MPBT0024201-MP	
23	MAIN FPCB	1	SACE0036701-MP	
22	KEY_CNT_PAD	1	MPBZ0113703-MP	
21	PAD(BACKUP_BAT)	1	MPBZ0113704-MP	
20	PAD(MAIN_CNT)	1	MPBZ0113702-MP	
19	PAD,MOTOR	1	MPBJ0029501-MP	
18	PAD,SPEAKER(LOWER)	1	MPBN0030701-MP	
17	CAM_WINDOW_PROTECTION_2	1	MTAB0107002-MP	
16	PCB, SLIDE LCD	1	C39XXX-A99XX-CXXX#	
15	SPEAKER	1	SUSY0021801-MP	
14	CAMERA_TAPE	1	MTAZ0124601-MP	
13	PLATE,LIGHT GUIDE	1	MPFL0000701-MP	
12	TAPE(PLATE,LIGHT GUIDE)	1	MTAZ0124601-MP	
11	VIBRATOR,MOTOR	1	SJMY0008203-MP	
10	WINDOW,LCD	1	AWAZ0008401-MP	
9	TAPE(removal tape)	1	MTAZ0127701-MP	
8	PAD,SPEAKER	1	MPBN0030601-MP	
7	FILTER,SPEAKER	1	MFBC0019701-MP	
6	PAD(FLASH_UPPER)	1	MPBZ0136201-MP	
5	PAD,LCD	1	MPBG0041301-MP	
4	COVER,SLIDE(UPPER)	1	MCJW0006901-MP	
3	TAPE_WINDOW	1	MTAD0052801-MP	
2	WINDOW,LCD	1	AWAZ0008401-MP	
1	TAPE,PROTECTION	1	MTAB0096001-MP	
NO.	PART NAME	Q'TY	DRAWING NO.	REMARK

75	LOCKER, BATTERY	1	MLEA0028901-MP	
74	TAPE, PROTECTION	1	MTAB0124601-MP	
73	PAD	1	MPBZ0136401-MP	
72	PAD	1	MPBZ0136301-MP	
71	SCREW (INTENNA)	1	GMET0013801-MP	
70	HINGE, GASKET	1	MGAD0104502-MP	
69	HINGE, GASKET	1	MGAD0104501-MP	
68	CAP, ASSY	1	ACAZ0005201-MP	
67	CAP, ASSY	1	ACAZ0005701-MP	
66	INSULATOR, LCD	1	MIDA0020901-MP	
65	BATTERY (HARD TYPE)	1	SBCL0001303-MP	
64	TAPE,PROTECTION	1	MTAB0117601-MP	
63	CAP_MOBILE_SWITCH	1	MCCF0032701-MP	
62	SPRING,LOCKER	2	MSDC0012501-MP	
61	COVER, REAR	1	MCJN0050101-MP	

12.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
1		GSM(SLIDE)	TGLL0005509		Black	
2	AAAY00	ADDITION	AAAY0167112		Silver	
3	MLAC00	LABEL,BARCODE	MLAC0003001	LABEL,BARCODE(for IMEI 4piece)	Metal Silver	
3	MLAZ00	LABEL	MLAZ0037301	LABEL(for seal_General)	Aqua Silver	
3	MPAC00	PACKING,ETC	MPAC0004202	Export Son 80-Phone Case	Without Color	
3	MPBZ00	PAD	MPBZ0132804	Son 80-Pad(Transparency)	Without Color	
3	MSCY00	SLEEVE	MSCY0002507	KG800 Open ENG	Without Color	
2	APEY00	PHONE	APEY0291205		Black	
3	ACGM00	COVER ASSY,REAR	ACGM0068401		Black	
4	GMEY00	SCREW MACHINE,BIND	GMEY0013801	1.4 mm,2.0 mm,MSWR3(FN) ,N ,+ ,NYLOK	Silver	
4	MCCE00	CAP,RECEPTACLE	MCCE0026401	MMI CAP	Black	57
4	MCJN00	COVER,REAR	MCJN0050101	GSM	Black	61
4	MGAD00	GASKET,SHIELD FORM	MGAD0104504	large one on the SUS plate	Black	53
4	MGAD01	GASKET,SHIELD FORM	MGAD0104505	small one on a SUS plate	Black	56
4	MGAD02	GASKET,SHIELD FORM	MGAD0104506	gasket sim connector	Without Color	55
4	MGAD03	GASKET,SHIELD FORM	MGAD0104507	gasket battery connector	Without Color	49
4	MLEA00	LOCKER,BATTERY	MLEA0028901		Black	75
4	MPBH00	PAD,MIKE	MPBH0020801		Without Color	50
4	MPBZ00	PAD	MPBZ0136301	PAD(RF TAPE)	Without Color	72
4	MPBZ01	PAD	MPBZ0136401	PAD(MULTIMEDIA CHIP)	Without Color	73
4	MPED00	PANEL,REAR	MPED0002401	PET FILM PRINTED WEEE SIMBOL	Black	52
4	MPED01	PANEL,REAR	MPED0002402	PC SHEET TO HIDE HOOK HOLE	Black	51
4	MPFZ00	PLATE	MPFZ0023201	CONNECTOR SUPPORT, MATERIAL : SUS 301 1/2H	Black	59
4	MSDC00	SPRING,LOCKER	MSDC0012501	length : 2.5mm , diameter : 1.8mm , diameter of material : 0.25, the number of rotation :3.5	Black	62
4	MTAB00	TAPE,PROTECTION	MTAB0117601	PROTECTION TPAE _ REAR	Without Color	64
4	MTAB01	TAPE,PROTECTION	MTAB0124601		Without Color	74

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	MTAZ00	TAPE	MTAZ0106707	REAR PLATE TAPE	Black	54
3	ACGQ00	COVER ASSY,SLIDE	ACGQ0012001		Black	
4	ACAZ00	CAP ASSY	ACAZ0005201	CAP SCREW ASSY LEFT	Black	68
5	MCCH00	CAP,SCREW	MCCH0074101	CAP SCREW LEFT	Black	
5	MTAZ00	TAPE	MTAZ0106701	TAPE CAP SCREW LEFT	Black	
4	ACAZ01	CAP ASSY	ACAZ0005701	CAP SCREW ASSY RIGHT	Black	67
5	MCCH00	CAP,SCREW	MCCH0078601	CAP SCREW RIGHT	Black	
5	MTAZ00	TAPE	MTAZ0106702	TAPE CAP SCREW RIGHT	Black	
4	ACGK00	COVER ASSY,FRONT	ACGK0077801		Black	
5	MBJC00	BUTTON,FUNCTION	MBJC0018902		Black	42
5	MBJN00	BUTTON,VOLUME	MBJN0007701		Black	41
5	MCJK00	COVER,FRONT	MCJK0054501	plated with tin(Sn)	Black	44
5	MPBZ00	PAD	MPBZ0132601	pad stopper	Without Color	45
5	MSHY00	SUPPORT	MSHY0010001		Black	39
5	MTAZ00	TAPE	MTAZ0106711	SIDE BUTTON ADHESIVE TAPE	Without Color	43
5	MTAZ01	TAPE	MTAZ0106706	FRONT GUIDE RAIL (POM) TAPE	Black	40
4	ACGR00	COVER ASSY, SLIDE(LOWER)	ACGR0006301		Black	
5	MCJV00	COVER,SLIDE(LOWER)	MCJV0005901		Black	30
5	MDAD00	DECO,CAMERA	MDAD0019401	SUS 304 1/2H + chromium plating	Black	34
5	MDAY00	DECO	MDAY0024501	LOWER DECO, plated with tin(Sn)	Black	28
5	MMAA00	MAGNET,SWITCH	MMAA0005201		Metal Silver	29
5	MPBH00	PAD,MIKE	MPBH0010901		Black	25
5	MPBJ00	PAD,MOTOR	MPBJ0029501	pad vibrator	Black	19
5	MPBN00	PAD,SPEAKER	MPBN0030701	pad speaker (lower)	Without Color	18
5	MPBT00	PAD,CAMERA	MPBT0024201		Black	24
5	MPBZ00	PAD	MPBZ0113701	CAMERA CONNECTOR GASKET	Black	27
5	MPBZ01	PAD	MPBZ0113702	MAIN FPCB CONNECTOR GASKET	Black	20
5	MPBZ02	PAD	MPBZ0113703	SLIDE KEYPCB CONNECTOR GASKET	Black	22
5	MPBZ03	PAD	MPBZ0113704	BACK UP BATTERY PAD	Black	21
5	MSHY00	SUPPORT	MSHY0009401	SLIDE GUIDE RAIL ON A LOWER COVER	Black	32
5	MTAB00	TAPE,PROTECTION	MTAB0107001	camera window, deco protection tape	Without Color	37
5	MTAB01	TAPE,PROTECTION	MTAB0107002	camera window protection tape	Without Color	17

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	MTAZ01	TAPE	MTAZ0132201	shading tape	Black	
5	MTAZ02	TAPE	MTAZ0106703	CAMERA WINDOW TAPE	Black	35
5	MTAZ03	TAPE	MTAZ0106704	CAMERA DECO TAPE	Black	33
5	MTAZ04	TAPE	MTAZ0106705	LOWER GUIDE RAIL(POM) TAPE	Black	31
5	MWAE00	WINDOW,CAMERA	MWAE0014801	slik printing, IR coating, thickness : 0.55, material : tempered glass	Black	36
5	MWAH00	WINDOW,FLASH	MWAH0004401		Black	26
4	ACGS00	COVER ASSY, SLIDE(UPPER)	ACGS0007301		Black	
5	AWAZ00	WINDOW ASSY	AWAZ0008401	IMD	Black	2,10
6	BFAA00	FILM,INMOLD	BFAA0039601	LG logo	Without Color	
6	MWAC00	WINDOW,LCD	MWAC0067501	IMD	Without Color	
5	MCJW00	COVER,SLIDE(UPPER)	MCJW0006901	double injection molding with Inmold film	Black	4
5	MFBC00	FILTER,SPEAKER	MFBC0019701		Black	7
5	MPBG00	PAD,LCD	MPBG0041301		Black	5
5	MPBN00	PAD,SPEAKER	MPBN0030601	speaker pad upper	Without Color	8
5	MPBZ00	PAD	MPBZ0136201		Without Color	6
5	MTAB00	TAPE,PROTECTION	MTAB0096001		Without Color	1
5	MTAD00	TAPE,WINDOW	MTAD0052801		Without Color	3
5	MTAZ00	TAPE	MTAZ0124601	camera tape	Without Color	12,14
5	MTAZ01	TAPE	MTAZ0127701	removal tape	Without Color	9
4	GMEY00	SCREW MACHINE,BIND	GMEY0012901	1.4 mm,2.5 mm,MSWR3 ,B ,+ ,	Silver	
4	GMEY01	SCREW MACHINE,BIND	GMEY0013402	1.4 mm,1.8 mm,MSWR3(BK) ,B ,+ ,HEAD t=0.6, HEAD d2.7 1.4 mm,1.8 mm,MSWR3(SV) ,B ,+ ,HEAD t=0.6, HEAD d2.7	Silver	
4	GMZZ00	SCREW MACHINE	GMZZ0019002	2.7 mm,1.5 mm,MSWR3 ,N ,+ ,- ,NYLOK Coating 1	Silver	
4	MGAD00	GASKET,SHIELD FORM	MGAD0104501	long stuff on a slide hinge to press the main pcb connector	Black	69
4	MGAD01	GASKET,SHIELD FORM	MGAD0104502	short one on a slide hinge	Black	70
4	MIDA00	INSULATOR,LCD	MIDA0020901		Without Color	66
4	MIDZ00	INSULATOR	MIDZ0099301		Without Color	
4	MIDZ02	INSULATOR	MIDZ0102401		Black	
4	MIDZ03	INSULATOR	MIDZ0102501		Black	

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	MLAC00	LABEL,BARCODE	MLAC0003401	EZ LOOKS(user for mechanical)	Without Color	
4	MPBZ00	PAD	MPBZ0113705	PAD HINGE	Black	
4	MPFL00	PLATE,LIGHT GUIDE	MPFL0000701	touch pad backlight panel	Without Color	13
4	MRAY00	RAIL	MRAY0003501	SLIDE HINGE RAIL	Black	
4	MTAZ00	TAPE	MTAZ0106710	tape vibrator	Without Color	
4	MTAZ01	TAPE	MTAZ0138801		Black	
4	MTAZ02	TAPE	MTAZ0140801		Without Color	
3	GMEY00	SCREW MACHINE,BIND	GMEY0010402	1.4 mm,2 mm,MSWR3(FN) ,N ,+ ,NYLOK	Black	
3	MBJA00	BUTTON,DIAL	MBJA0020403	EUROP	Black	46
3	MCCF00	CAP,MOBILE SWITCH	MCCF0032701		Black	63
3	MLAK00	LABEL,MODEL	MLAK0019102	EUROP & CIS	Without Color	
5	ADCA00	DOME ASSY,METAL	ADCA0047401	MAIN KEY PAD, EL DOME SHEET	Without Color	
5	MTAZ00	TAPE	MTAZ0139101		Black	
5	MTAZ00	TAPE	MTAZ0141201		Without Color	
5	MTAZ01	TAPE	MTAZ0127801	RF tape	Without Color	
5	MLAB00	LABEL,A/S	MLAB0000601	HUMIDITY STICKER	Without Color	
5	MLAC00	LABEL,BARCODE	MLAC0003301	EZ LOOKS(use for PCB ASSY MAIN(hardware))	Without Color	

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0012001	2.5:1 ,-10.1 dBd, ,2.5:1 ,-10.1 dBd, Internal B.T PIFA Pb-Free		60
4	SNGF01	ANTENNA,GSM,FIXED	SNGF0014201	8.0:1,7.3:1 ,-4.0 dBd, ,GSM900/DCS1800/PCS1900 INTERNAL PIPA TYPE Pb-Free		58
4	SACY00	PCB ASSY,FLEXIBLE	SACY0041501			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0036601			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0020501			
7	C1000	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C1001	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C1002	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	CN1000	CONNECTOR,BOARD TO BOARD	ENBY0018501	10 PIN,.4 mm,STRAIGHT , ,H=0.9,HEADER		
7	LD1000	DIODE,LED,CHIP	EDLH0012001	RED ,ETC ,R/TP ,side view(PB-FREE)		
7	LD1001	DIODE,LED,CHIP	EDLH0012001	RED ,ETC ,R/TP ,side view(PB-FREE)		
7	LD1002	DIODE,LED,CHIP	EDLH0012001	RED ,ETC ,R/TP ,side view(PB-FREE)		
7	LD1004	DIODE,LED,CHIP	EDLH0012001	RED ,ETC ,R/TP ,side view(PB-FREE)		
7	LD1005	DIODE,LED,CHIP	EDLH0012001	RED ,ETC ,R/TP ,side view(PB-FREE)		
7	LD1006	DIODE,LED,CHIP	EDLH0012001	RED ,ETC ,R/TP ,side view(PB-FREE)		
7	R1000	RES,CHIP	ERHY0000208	22 ohm,1/16W,J,1005,R/TP		
7	R1001	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
7	R1002	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
7	R1003	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
7	R1004	RES,CHIP	ERHY0000208	22 ohm,1/16W,J,1005,R/TP		
7	R1005	RES,CHIP	ERHY0000224	180 ohm,1/16W,J,1005,R/TP		
7	R1007	RES,CHIP	ERHY0000222	120 ohm,1/16W,J,1005,R/TP		
7	R1008	RES,CHIP	ERHY0000216	68 ohm,1/16W,J,1005,R/TP		
7	R1009	RES,CHIP	ERHY0000224	180 ohm,1/16W,J,1005,R/TP		
7	U1000	IC	EUSY0277001	Cap sense Inputs device ,32 PIN,R/TP ,5*5 Capsense TrackPad		
6	SPCY	PCB,FLEXIBLE	SPCY0070601	POLYI ,0.5 mm,MULTI-4 ,		
4	SACY01	PCB ASSY,FLEXIBLE	SACY0041601			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0036701			

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0020601			
7	CN102	CONNECTOR,BOARD TO BOARD	ENBY0023801	30 PIN,.4 mm,ETC , ,H=0.9, Header		
7	CN803	CONNECTOR,BOARD TO BOARD	ENBY0016701	20 PIN,0.4 mm,STRAIGHT ,AU ,0.9 STACKING,MALE		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0029601			
7	CN500	CONNECTOR,BOARD TO BOARD	ENBY0020202	60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 0.9 / HEADDER FOR KEYPAD TO MAIN		
7	CN501	CONNECTOR,BOARD TO BOARD	ENBY0020202	60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 0.9 / HEADDER FOR KEYPAD TO MAIN		
7	CN801	CONNECTOR,BOARD TO BOARD	ENBY0022901	70 PIN,0.4 mm,ETC , ,H=0.9, Plug		
6	SPCY00	PCB,FLEXIBLE	SPCY0070701	POLYI ,0.5 mm,MULTI-4 ,		
4	SAEY00	PCB ASSY,KEYPAD	SAEY0048701			
5	SAEE00	PCB ASSY,KEYPAD,SMT	SAEE0016001			
6	SAEC00	PCB ASSY,KEYPAD,SMT BOTTOM	SAEC0014201			
7	C110	CAP,TANTAL,CHIP,MAKER	ECTZ0004201	22 uF,6.3V ,M ,STD ,2012 ,R/TP		
7	C111	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C112	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C113	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C114	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C123	CAP,TANTAL,CHIP	ECTH0001903	22 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
7	C124	CAP,TANTAL,CHIP	ECTH0001903	22 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
7	C125	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C126	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
7	C127	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C201	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C202	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C203	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
7	C204	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C205	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C207	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C208	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
7	C209	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C211	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C212	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
7	C213	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
7	C214	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
7	C215	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	CN201	TERMINAL,GROUND	MTCA0002301		Without Color	
7	CN202	CONNECTOR,BOARD TO BOARD	ENBY0020401	24 PIN,0.4 mm,ETC , ,H=0.9, Socket		
7	CN203	CONNECTOR,BOARD TO BOARD	ENBY0022801	70 PIN,0.4 mm,ETC , ,H=0.9, Socket		
7	CN204	CONNECTOR,BOARD TO BOARD	ENBY0018601	10 PIN,.4 mm,STRAIGHT , ,H=0.9, SOCKET		
7	D201	DIODE,SWITCHING	EDSY0012301	1-1E1A ,85 V,1 A,R/TP ,P=200mW, IFM=200mA		
7	FB103	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
7	FL201	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
7	FL202	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
7	FL203	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
7	FL204	FILTER,EMI/POWER	SFEY0011601	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (50 Ohm,15pF)		
7	L201	INDUCTOR,CHIP	ELCH0005019	68 nH,J ,1005 ,R/TP ,		
7	L202	INDUCTOR,CHIP	ELCH0005019	68 nH,J ,1005 ,R/TP ,		
7	LD201	DIODE,LED,MODULE	EDLM0005501	R,G,B ,3 LED,3.5*2.8*1.8 ,R/TP ,Flash LED		
7	MIC100	MICROPHONE	SUMY0010508	PIN ,42 dB,4*4 ,SMD Bridge Type		
7	Q201	TR,BJT,ARRAY	EQBA0002701	EMT6 ,150 mW,R/TP ,NPN, PNP, 150 mA		
7	R103	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
7	R104	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
7	R105	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
7	R106	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
7	R201	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R202	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R203	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
7	R204	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
7	R205	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
7	R206	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
7	R207	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
7	R208	INDUCTOR,CHIP	ELCH0004715	27 nH,J ,1005 ,R/TP ,		
7	R209	INDUCTOR,CHIP	ELCH0004715	27 nH,J ,1005 ,R/TP ,		
7	R210	RES,CHIP	ERHY0000212	39 ohm,1/16W,J,1005,R/TP		
7	R211	RES,CHIP	ERHY0000212	39 ohm,1/16W,J,1005,R/TP		

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Level	Location No.	Description	Part Number	Specification	Color	Remark
7	R212	RES,CHIP	ERHY0000212	39 ohm,1/16W,J,1005,R/TP		
7	R213	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
7	R299	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
7	U104	IC	EUSY0151902	SC70JW8 ,8 PIN,R/TP ,150mA High Performance LDO		
7	VA100	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
7	VA101	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
7	VA201	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
7	VA202	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
6	SAED00	PCB ASSY,KEYPAD,SMT TOP	SAED0014401			
7	C100	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C101	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C102	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C103	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
7	C104	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C105	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C107	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
7	C108	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C109	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C115	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C116	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
7	C117	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
7	C118	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
7	C119	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C120	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C121	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C122	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
7	C128	CAP,TANTAL,CHIP	ECTH0004101	22 uF,6.3V ,M ,STD ,1608 ,R/TP		
7	C129	CAP,TANTAL,CHIP	ECTH0004101	22 uF,6.3V ,M ,STD ,1608 ,R/TP		
7	C210	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C216	CAP,TANTAL,CHIP	ECTH0004101	22 uF,6.3V ,M ,STD ,1608 ,R/TP		
7	C220	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C221	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	CN100	CONNECTOR,FFC/FPC	ENQY0012201	35 PIN,0.3 mm,ETC , ,H=1.0		

Level	Location No.	Description	Part Number	Specification	Color	Remark
7	FB100	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
7	FB101	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
7	FB102	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
7	FL101	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
7	FL102	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
7	FL103	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
7	FL104	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
7	Q202	TR,BJT,NPN	EQBN0004801	SMT6 ,0.2 W,R/TP ,		
7	R102	RES,CHIP	ERHY0000230	330 ohm,1/16W,J,1005,R/TP		
7	R107	RES,CHIP	ERHY0000258	7.5K ohm,1/16W,J,1005,R/TP		
7	R108	RES,CHIP	ERHY0000258	7.5K ohm,1/16W,J,1005,R/TP		
7	R109	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
7	R110	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R191	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
7	R215	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R216	RES,CHIP	ERHY0000262	12K ohm,1/16W,J,1005,R/TP		
7	R217	RES,CHIP	ERHY0000203	10 ohm,1/16W,J,1005,R/TP		
7	R218	RES,CHIP	ERHY0000203	10 ohm,1/16W,J,1005,R/TP		
7	U100	IC	EUSY0245401	DFN ,16 PIN,R/TP ,Main 3 LEDs(60mA) + Flash (300mA) Charge pump		
7	U101	IC	EUSY0223007	HVSOF5 ,5 PIN,R/TP ,2.5V, 150mA,LDO		
7	U102	IC	EUSY0223003	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 3.3V		
7	U103	IC	EUSY0154410	MLF ,10 PIN,R/TP ,Dual(1.8V/150mA,2.8V/300mA) LDO Regulator		
7	U105	IC	EUSY0159101	MICRO FOOT(6 BUMP) ,6 PIN,R/TP ,SPDT ANALOG SWITCH		
6	SPEY00	PCB,KEYPAD	SPEY0041701	FR-4 ,0.5 mm,BUILD-UP 6 ,		
4	SBCL00	BATTERY,CELL,LITHIUM	SBCL0001303	2 V,1 mAh,COIN ,SOLDER TYPE BACKUP BATTERY		65
4	SJMY00	VIBRATOR,MOTOR	SJMY0008203	3 V,.1 A,10*2.0T ,12mm		11
4	SUSY00	SPEAKER	SUSY0021801	ASSY ,8 ohm,89 dB,15 mm,*10mm		15
4	SVCY00	CAMERA	SVCY0010701	CMOS ,MEGA ,1.3M Micon(SOC1320) 1/4", 8*8*5.4t, FPCB		
4	SVLM00	LCD MODULE	SVLM0017401	MAIN ,176*220, 2.0" ,37.2*50 ,262k ,TFT ,TM ,uPD161704 (NEC) ,		
3	SAEY00	PCB ASSY,KEYPAD	SAEY0048601			47
4	SAEB00	PCB ASSY, KEYPAD,INSERT	SAEB0014501			

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	SPKY00	PCB,SIDEKEY	SPKY0033101	POLYI ,0.3 mm,DOUBLE ,VOLUME		
5	SPKY01	PCB,SIDEKEY	SPKY0033201	POLYI ,0.3 mm,DOUBLE ,MP3		
4	SAEE00	PCB ASSY,KEYPAD,SMT	SAEE0015901			
5	SAEC00	PCB ASSY,KEYPAD,SMT BOTTOM	SAEC0014001			
6	C104	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C201	CAP,TANTAL,CHIP,MAKER	ECTZ0004201	22 uF,6.3V ,M ,STD ,2012 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C203	CAP,TANTAL,CHIP,MAKER	ECTZ0004204	100 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C204	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000167	0.1 uF,6.3V,K,X5R,HD,1005,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0000159	22 nF,16V,K,X7R,HD,1005,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	CN201	CONNECTOR,ETC	ENZY0017701	3 PIN,2.5 mm,ETC , ,H=1.4		
6	CN202	CONNECTOR,BOARD TO BOARD	ENBY0016601	20 PIN,0.4 mm,STRAIGHT ,AU ,0.9 STACKING HEIGHT		
6	CN203	CONNECTOR,BOARD TO BOARD	ENBY0023901	30 PIN,0.4 mm,ETC , ,H=0.9, Socket		
6	J201	CONN,SOCKET	ENSY0016501	6 PIN,ETC , ,2.54 mm,H=1.5		
6	L101	INDUCTOR,CHIP	ELCH0004711	22 nH,J ,1005 ,R/TP ,		
6	L201	INDUCTOR,SMD,POWER	ELCP0006801	820 uH,K ,3.8*3.8*1.3 ,R/TP ,		
6	M101	IC	EUSY0239102	6.9 * 7.9 * 1.5 mm ,28 PIN,R/TP ,Bluetooth Module v1.2, 26MHz, For GSM		
6	R101	INDUCTOR,CHIP	ELCH0003826	3.3 nH,S ,1005 ,R/TP ,chip		
6	R102	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R103	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
6	R104	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
6	R110	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R201	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R202	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
6	R203	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R204	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
6	R205	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R206	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R207	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
6	R208	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R209	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R210	RES,CHIP	ERHY0000138	33K ohm,1/16W,F,1005,R/TP		
6	R211	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R212	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R213	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R214	RES,CHIP	ERHY0000276	68K ohm,1/16W,J,1005,R/TP		
6	R215	RES,CHIP	ERHY0008605	33 ohm,1/4W ,J ,2012 ,R/TP		
6	U101	IC	EUSY0227901	SON5-P-0.35(fSV) ,5 PIN,R/TP ,2-INPUT AND GATE, Pb Free		
6	U102	IC	EUSY0223002	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 2.8V		
6	U201	IC	EUSY0254701	DFN 3*3*0.9 ,10 PIN,R/TP ,Charger IC, I Max 1A, Wall Adaptor/USB Charger		
6	U202	IC	EUSY0250101	MSOP ,8 PIN,R/TP ,AC_182Vpp EL DRIV		
6	VA101	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	VA102	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
6	VA103	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
6	VA203	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
6	VA204	VARISTOR	SEVY0004001	18 V, ,SMD ,3pF, 1005		
6	VA205	VARISTOR	SEVY0004001	18 V, ,SMD ,3pF, 1005		
6	ZD201	DIODE,ZENER	EDNY0010401	USC ,100 V,0.2 W,R/TP ,		
5	SAED00	PCB ASSY,KEYPAD,SMT TOP	SAED0014301			
6	MIC201	MICROPHONE	SUMY0009203	UNIT ,42 dB,4*1.5 ,Reverse TYPE		
5	SPEY	PCB,KEYPAD	SPEY0041801	FR-4 ,0.5 mm,BUILD-UP 6 ,		
3	SAFY00	PCB ASSY,MAIN	SAFY0155926			
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0055201			
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0078128			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0068801			
6	C142	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C143	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C200	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C214	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C226	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C229	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C305	CAP,TANTAL,CHIP	ECTH0001903	22 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C309	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C313	CAP,TANTAL,CHIP,MAKER	ECTZ0004204	100 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C314	CAP,TANTAL,CHIP,MAKER	ECTZ0004204	100 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C318	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C320	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C321	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C331	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C332	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C333	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C335	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C336	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C337	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C341	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C342	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C400	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C404	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C410	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C411	CAP,TANTAL,CHIP,MAKER	ECTZ0004201	22 uF,6.3V ,M ,STD ,2012 ,R/TP		
6	C412	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C414	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C415	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C416	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C419	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C423	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C426	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C428	INDUCTOR,CHIP	ELCH0005002	2.7 nH,S ,1005 ,R/TP ,		
6	C429	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C430	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C431	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C432	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C434	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C435	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C436	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C500	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C589	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	CN300	CONNECTOR,I/O	ENRY0006401	18 PIN,0.4 mm,ANGLE , ,H=2.5, Reverse Type		
6	FB200	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FL300	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
6	FL301	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
6	FL302	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
6	FL400	FILTER,SEPERATOR	SFAY0006503	900 ,1800.1900 ,3.7 dB,3.8 dB,30 dB,30 dB,ETC ,5.2*4.0*1.8 Size, Triple FEM with unbalanced SAW		
6	FL502	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
6	FL504	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
6	FL506	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	FL507	FILTER,EMI/POWER	SFEY0011101	SMD ,4 ch,ESD protection,1608 size,0ohm,18V,30pF		
6	FL508	FILTER,EMI/POWER	SFEY0012501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,25pF)		
6	FL510	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL511	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL512	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL513	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL514	FILTER,EMI/POWER	SFEY0011901	SMD ,18V,4ch. EMI_ESD Filter (400 Ohm,15pF)		
6	FL515	FILTER,EMI/POWER	SFEY0011901	SMD ,18V,4ch. EMI_ESD Filter (400 Ohm,15pF)		
6	FL520	FILTER,EMI/POWER	SFEY0011501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (200 Ohm,15pF)		
6	L400	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	L401	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	R205	RES,CHIP	ERHY0000150	75K ohm,1/16W,F,1005,R/TP		
6	R209	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R302	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R303	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R304	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R306	RES,CHIP	ERHY0000269	30K ohm,1/16W,J,1005,R/TP		
6	R308	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R309	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R310	RES,CHIP	ERHY0000269	30K ohm,1/16W,J,1005,R/TP		
6	R313	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R316	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
6	R317	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R318	RES,CHIP	ERHY0000251	3.6K ohm,1/16W,J,1005,R/TP		
6	R320	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R400	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R401	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
6	R402	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R403	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R404	RES,CHIP	ERHY0000106	100 ohm,1/16W,F,1005,R/TP		
6	R405	INDUCTOR,CHIP	ELCH0001427	2.2 nH,S ,1005 ,R/TP ,Pb Free		
6	R406	CAP,CHIP,MAKER	ECZH0000806	5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	R407	INDUCTOR,CHIP	ELCH0003814	5.1 nH,S ,1005 ,R/TP ,5.1nH,1005		
6	R502	RES,CHIP	ERHY0000255	5.6K ohm,1/16W,J,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	SW400	CONN,RF SWITCH	ENWY0003002	STRAIGHT ,SMD ,0.3 dB,T510, 3.8X3.0X3.6T		
6	U202	IC	EUSY0265202	BGA(8*8) ,140 PIN,R/TP ,3M Camera, TV Out, NAND I/F, Multi Media Chip		
6	U204	IC	EUSY0154410	MLF ,10 PIN,R/TP ,Dual(1.8V/150mA,2.8V/300mA) LDO Regulator		
6	U301	IC	EUSY0271201	TQFN ,16 PIN,R/TP ,Quad Analog switch, Pb Free		
6	U302	IC	EUSY0163901	uCSP ,10 PIN,R/TP ,Dual Analog Switch, 300MHz Bandwidth		
6	U303	DIODE,TVS	EDTY0006501	SC70-6L ,5.25 V,100 W,R/TP ,		
6	U304	IC	EUSY0119002	4X3 UCSP / CODE : B12-4 ,10 PIN,R/TP ,DUAL SPDT ANALOG SWITCHES(Pb Free)		
6	U305	IC	EUSY0119002	4X3 UCSP / CODE : B12-4 ,10 PIN,R/TP ,DUAL SPDT ANALOG SWITCHES(Pb Free)		
6	U308	IC	EUSY0159101	MICRO FOOT(6 BUMP) ,6 PIN,R/TP ,SPDT ANALOG SWITCH		
6	U400	IC	EUSY0077201	SC70 ,5 PIN,R/TP ,Inverter Gate, Pb Free		
6	U401	IC	EUSY0263002	MCM ,64 PIN,R/TP ,RFIC integrated PAM, 6 *11Size, 12 Version		
6	U402	IC	EUSY0218401	UCSP ,10 PIN,R/TP ,Dual Analog switch with shunt switch, Pb Free		
6	VA300	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
6	VA301	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
6	X400	VCTCXO	EXSK0006201	13 MHz,2 PPM,10 pF,SMD ,3.2*2.5*1.0 ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0068001			
6	C100	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C101	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C110	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C115	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C117	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000165	68 nF,6.3V,K,X5R,HD,1005,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C123	CAP,CHIP,MAKER	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C124	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C131	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C138	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C140	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C141	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C210	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C300	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C310	CAP,CHIP,MAKER	ECZH0001121	470 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C312	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C315	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C316	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C317	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C319	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
6	C322	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C323	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C325	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C326	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C327	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C329	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C330	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C334	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C338	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C339	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C340	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C501	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C504	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C505	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C506	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C508	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C509	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C512	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
6	C513	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C514	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C515	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C516	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C517	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C597	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C598	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C599	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	CN500	CONNECTOR,BOARD TO BOARD	ENBY0020402	60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 0.9 / SOCKET FOR KEYPAD TO MAIN		
6	CN501	CONNECTOR,BOARD TO BOARD	ENBY0020402	60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 0.9 / SOCKET FOR KEYPAD TO MAIN		
6	D100	DIODE,SWITCHING	EDSY0017301	VSM ,15 V,100 mA,R/TP ,PB-FREE		
6	D101	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
6	D102	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
6	R100	RES,CHIP	ERHY0000226	220 ohm,1/16W,J,1005,R/TP		
6	R101	RES,CHIP	ERHY0010201	1.2 Mohm,1/16W ,F ,1005 ,R/TP		
6	R102	RES,CHIP	ERHY0000106	100 ohm,1/16W,F,1005,R/TP		
6	R103	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R104	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R105	RES,CHIP	ERHY0000512	10M ohm,1/16W,J,1608,R/TP		
6	R106	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R107	RES,CHIP	ERHY0000267	24K ohm,1/16W,J,1005,R/TP		
6	R108	RES,CHIP	ERHY0000291	330K ohm,1/16W,J,1005,R/TP		
6	R109	RES,CHIP	ERHY0000152	82K ohm,1/16W,F,1005,R/TP		
6	R110	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
6	R111	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
6	R114	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R115	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R116	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R200	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R202	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
6	R206	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R207	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R208	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R211	RES,CHIP	ERHY0000274	51K ohm,1/16W,J,1005,R/TP		
6	R300	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
6	R301	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
6	R305	RES,CHIP	ERHY0000268	27K ohm,1/16W,J,1005,R/TP		
6	R307	RES,CHIP	ERHY0000250	3.3K ohm,1/16W,J,1005,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000478	3.3 ohm,1/16W ,J ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R312	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
6	R314	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R315	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R500	RES,CHIP	ERHY0000229	300 ohm,1/16W,J,1005,R/TP		
6	R501	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
6	R599	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	U100	IC	EUSY0181601	BGA ,148 PIN,R/TP ,GSM ANALOG BASEBAND, Pb Free		
6	U101	IC	EUSY0181504	CSP BGA ,204 PIN,R/TP ,AD6527 w/USB		
6	U200	IC	EUSY0223003	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 3.3V		
6	U203	IC	EUSY0290601	BGA ,107 PIN,R/TP ,P-FBGA, 128*128*64*1G, 9*12*1.4t, BOTTOM/TOP BOOT ,Pb-Free		
6	U205	IC	EUSY0129503	2x2 mm MLPD ,3 PIN,R/TP ,Hall Effect Switch, Pb Free		
6	U300	IC	EUSY0259801	WLCSP ,67 PIN,R/TP ,WLCSP ,67PIN,R/TP ,MA5Si2(64POLY MIDI / Internal D-AMP)		
6	U306	IC	EUSY0275701	MICRO FOOT ,10 PIN,R/TP ,Analog switch(pin-to-pin MAX4717EBC), Pb Free		
6	U307	IC	EUSY0133901	Micro SMD, 5 Bump Package ,5 PIN,R/TP ,150mA-CMOS-LDO,PBFREE		
6	X100	X-TAL	EXXY0004601	.032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		
5	SPFY00	PCB,MAIN	SPFY0123101	FR-4 , mm,NMBI 8 ,		

12.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
3	MHBY00	HANDSTRAP	MHBY0003604		Without Color	
3	SBPP00	BATTERY PACK,LI-POLYMER	SBPP0015301	3.7 V,800 mAh,1 CELL,PRISMATIC ,EXTRA Model BATT, Pb-Free		
3	SGDY00	DATA CABLE	SGDY0010901	LG-US03K ,18pin USB DataCable		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0004211	SON80 800ER,EAR PHONE ,REMOCON,800ER EARPHONE		
3	SSAD00	ADAPTOR,AC-DC	SSAD0021001	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021002	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021003	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021004	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021005	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021006	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021007	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		

Note